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ABSTRACT

The educational and recreational programs of the United States Fish and Wildlife Service (FWS) are carried out to help achieve the overall mission of the FWS, which is to provide federal leadership to conserve, protect, and enhance fish and wildlife and their habitats for the continuous benefit of people. A set of standards and related questions were developed to evaluate FWS interpretation and recreation (I&R) programs in terms of the FWS mission objective. This handbook, designed to be used with these standards and questions, explains the rationale for the standards/questions, identifies resources for additional study, and offers suggestions for bringing an I&R program into compliance with applicable standards. Information is provided in three major sections which focus on planning, evaluation, and development. A list of the standards and questions is included. Each question is accompanied by one or more sources of additional information. These sources include sections in this handbook (identified by paragraph number), FWS policy and procedure issues in the "Interpretation and Recreation Program Management Document," information in the FWS "Refuge Manual," and information from other sources. (JN)

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Introduction.....

The educational and recreational programs of the U.S. Fish and Wildlife Service (FWS) are carried out in order to help achieve the overall mission of the FWS, which is to "provide federal leadership to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of people." All efforts in planning, delivery of programs, and evaluation of the Interpretation and Recreation Program (I & R) must be tied to the larger objective of station management and hence the FWS mission objective. Each part of planning and delivering educational or recreational programs must be tested according to one criterion: "Is this contributing to management and FWS objectives? and if so, how effective is it?" Similarly other Program areas of the Service should be considering how problems and information discovered in their Programs could be incorporated in educational or recreational activities. Comparing the results of I & R or any other Program to the goal of the Service is one very critical evaluation.

The Education and Recreation Standards are one method of evaluating an I & R Program. The standards were developed to identify the characteristic components of high quality educational or recreational programs. The questions address whether FWS policies and priorities were observed; whether accepted planning procedures were followed; whether educational programs are conducive to learning and whether recreational activities are likely to produce enjoyable experiences. The standards are one indication of whether a Program is doing what it's supposed to be doing in terms of fulfilling its obligations to the FWS and the public.

The questions in the Education and Recreation Standards allow a "yes," "no," or "not applicable" response. Either something is happening or it's not and there is no allowance for "most of the time" or any percentage in-between. At the same time a "yes" response may not reveal why or how you met one of the standard's requirements. Was it because the staff did a superb job of planning or because an Outdoor Recreation Planner was

especially effective in working with people? Other means of data collection and assessment are needed to help station personnel determine that. This handbook is intended to answer some of the questions raised by the Standards and supply some of the "missing links" in planning, delivering, and evaluating educational and recreational programs.

How to Use This Handbook

This Handbook is an accompaniment to the Education and Recreation Standards. In the Index (pages 4 - 20) you will note that the questions from the Standards are printed on the left side of the page; across from each question are various topics and numbers which indicate where to find information on that question. For example, suppose station staff evaluated their education and recreation program using the Standards and now wish to investigate the questions to which they responded "no." Suppose they answered "no" to question I.A.1. (which asks whether the natural resource concepts presented in outdoor classrooms emphasize concepts important to the FWS or the natural resources of the site) and wonder why this is important and how they might adapt their Program to meet this standard. The Index for this question refers the user to FWS policy statements in the I & R Program Management Document, to paragraphs in this Handbook dealing with planning, and to paragraphs that address the rationale behind the question. Similar references accompany all questions from the Standards.

Each question from the Standards is indexed according to the process or subject involved:

- FWS policy and procedure issues are referenced by outline number in the Interpretation and Recreation Program Management Document (March 18, 1982).
- Applicable sections from the FWS Refuge Manual are referenced.
- Information on the rationale behind a question, background information, and suggestions for activities and programs are referenced by paragraph numbers in this Handbook. Paragraphs are numbered consecutively within each of the three parts: Part 1 is on planning, Part 2 is evaluation and data collection, and Part 3 is on

program development. For example, paragraph 3.32 is the thirty-second paragraph in Part 3. Paragraph numbers are written at each paragraph indentation and at the right side of the page.

- Additional resources and references are also suggested. Contact the FWS Extension Education Office in Washington, D.C. to obtain copies of articles or books (on loan) for any of the Resources listed in this Handbook.

This Handbook was written to give the user specific suggestions for certain tasks, but more importantly, to give general concepts and the reasons behind certain procedures. We cannot give you a manual to deal with all the variables at your field station. But with a principle and some examples of its application, I & R personnel and station managers can more effectively deal with the problems--and the potential--of inviting the public to FWS field stations.

Index.....

Key to Abbreviations

PMD: Interpretation & Recreation Program Management Document March 18, 1982.

RM: U.S. Fish and Wildlife Service Refuge Manual, prefaced by chapter number and followed by section number.

All other designations are to paragraph numbers in this Handbook.

QUESTIONS from Education and Recreation Standards

OUTDOOR CLASSROOMS

Planning

- | | |
|--|---|
| I.A.1. Does this station offer any Outdoor Classroom activities? | 8 RM 3; Assessing potential 1.6-1.22 |
| I.A.2. Has an I & R (or master) plan been written and submitted for the station that includes a section on Outdoor Classrooms? | 8 RM 3.5; Planning 1.1-1.33 |
| I.A.3. Is the Outdoor Classrooms section of the I & R (or master) plan reviewed (and updated if needed) on an annual basis? | Policy PMD IV.D.2.(1); Rationale 1.2 |
| I.A.4. Is an annual plan of work prepared for Outdoor Classrooms? | Policy 8 RM 3.5; Rationale 1.2; Policy PMD IV.D.2.(1) |
| I.A.5. Have FWS policies affecting educational activities been analyzed and incorporated into procedures for providing Outdoor Classroom programs? | 8 RM 3.2 Policy PMD III.B.4; Planning 1.5-1.7, 1.10; The Plan 1.23-1.33 |
| I.A.6. Have cultural and natural resources with potential for outdoor classrooms been identified in the I & R (or master) plan? | Data Collection 1.5-1.9 |
| I.A.7. Have Outdoor Classroom sites been identified on a detailed station map? | Analysis 1.8, 1.9 |
| I.A.8. Have potential sites for Outdoor Classrooms been appraised in the I & R (or master) plan? | Analysis 1.8, 1.9 |
| I.A.9. Have learning materials that are available for Outdoor Classrooms been catalogued? | Records 2.14-2.16 |
| I.A.10. Have resources used by FWS staff in preparing for Outdoor Classrooms been inventoried and catalogued? | Records 2.14-2.18 |

Using FWS Resources

- | | |
|---|---|
| I.A.11. Do natural resource concepts presented in Outdoor Classrooms emphasize resource concepts important to FWS or the natural resources of the site? | Policy PMD II.C, III.B.4.b, IV.D.1; Planning 1.1-1.33; Rationale 3.25-3.26, 3.30-3.33 |
| I.A.12. Do cultural resource concepts presented in Outdoor Classrooms emphasize management problems or cultural history concepts of the area? | Policy PMD III.B.4.a, IV.D.1; Rationale 3.2, 3.7 |
| I.A.13. Do Outdoor Classroom sites provide representative samples of station resource concepts or problems? | Analysis 1.8-1.10; Rationale 3.25-3.26, 3.30-3.33 |
| I.A.14. Are resource problems important to FWS given high priority in planning the content of learning activities for outdoor classrooms? | 8 RM 3.5; PMD priority III.A.3.c, Policy III.B.4.b; IV.D.1 |

QUESTIONS

- I.A.15. Are resource problems important to FWS or the station given high priority in planning the content of teacher workshops in environmental education?
- I.A.16. Was the impact on the station environment considered in the choice of activities and sites for Outdoor Classrooms?
- I.A.17. Has the staff determined whether station environmental education (EE) activities duplicate EE efforts of other agencies in the vicinity?
- I.A.18. Do station I & R staff predominantly coordinate and monitor, rather than teach, Outdoor Classroom sessions?

REFERENCES

- 8 RM 3.5; PM D priority III.A.3.C, Policy III B.4.b; IV.D.1
- 8 RM 3.6; Analysis 1.8-1.10; Monitoring 1.29; Carrying Capacity 3.61-3.64
- Policy, PMD III.B.4.c; Analysis 1.8-1.10
- Policy PMD III.B.4.g

Evaluation

Are activities and lesson plans of Outdoor Classroom sessions (involving FWS staff) reviewed and are records kept of:

- I.A.19. --sub-themes and objectives of Outdoor Classroom activities? Evaluation 2.1-2.4, 2.12; Records 2.14-2.16, 2.19
- I.A.20. --resource concepts addressed in Outdoor Classroom activities? Evaluation 2.1, 2.4, 2.12; Records 2.14, 2.15, 2.19
- I.A.21. --percent of staff time devoted to Outdoor Classroom activities? Evaluation 2.1, 2.5, 2.6; Records 2.14, 2.16
- I.A.22. --effectiveness of teaching methods and aids used (by FWS staff) in Outdoor Classroom activities? Evaluation 2.1, 2.2, 2.4, 2.5, 2.6, 2.9, 2.12; Records 2.15, 2.16; Methods 2.19.m,n,s
- Is the Outdoor Classroom program evaluated on an annual basis according to objectives in the I & R (or master) plan and recommendations made for:
- I.A.23. --new study topics? Evaluation 2.1-2.5, 2.12-2.15; Planning 1.1-1.33; Methods 2.19.m,n,q
- I.A.24. --staff additions or changes? Evaluation 2.1, 2.7; Methods 2.12, 2.19.w,x,y
- I.A.25. --staff training needs? Evaluation 2.1, 2.7; Methods 2.12, 2.19.w,x,y
- I.A.26. --audience research/ surveys needed, either formal or informal? Planning 1.12-1.22, 1.29; Rationale 2.1, 2.5, 2.6; Methods 2.9, 2.12, 2.13, 2.17, 2.19.a-q
- I.A.27. --priorities in adding new activities? Planning 1.8-1.10, 1.30; Evaluation 2.1-2.6, 2.12, 2.17; Carrying Capacity 3.61-3.64
- I.A.28. --additions or changes in facilities or equipment? Evaluation 2.1-2.5, 2.8-2.17
- I.A.29. Are conditions of sites, facilities, and equipment used for Outdoor Classrooms regularly inspected? Evaluation 2.8, 2.11; Safety 3.76-3.78
- I.A.30. Have media and resources used in Outdoor Classrooms been assessed to determine if these are based on accurate information, both in terms of content and technique? Planning 1.8-1.10, 1.29; Evaluation 2.5, 2.9, 2.10, 2.19.s

QUESTIONS

Setting Objectives

- I.B.1. Are objectives written for outdoor classroom sessions or activities?
- I.B.2. Are the objectives measurable?
- I.B.3. Are the steps for accomplishing each objective identified in a written lesson or activity plan?

Audience Identification

Have the following characteristics of participants in Outdoor Classrooms been identified and incorporated into teaching techniques or content chosen for Outdoor Classroom activities:

- I.B.4. --numbers of participants in different age groups?
- I.B.5. --types of audience grouping (class, science club, etc.)?
- I.B.6. --the subject areas represented by participating classes or workshop (e.g. art, English, science, history)?
- I.B.7. --the educational levels of the groups?
- I.B.8. --the environmental awareness of class members or workshop participants?
- I.B.9. --physical or mental limitations of participants?
- I.B.10. --geographical origin of the group/class?
- I.B.11. --amount of time participants spend on site?
- I.B.12. --the amount of use (service-provided) environmental education materials have received by teachers and other professionals in education?
- I.B.13. Is the staff familiar with the type and scope of EE in the public schools in the area?

Relating Program to Audience

- I.B.14. Do learning activities or study topics recommended to Outdoor Classroom groups relate to their backgrounds and interests?
- I.B.15. Prior to EE workshops, does the FWS staff person determine the educational backgrounds or interests of the participants?
- I.B.16. Are the examples, terminology, and comparisons used in workshop presentations within the probable vocabulary and experience of the class members?

REFERENCES

Planning 1.23-1.25; Writing 1.25

Evaluating 2.2-2.4

Planning 1.2-1.4, 1.23, 1.27, 1.28

Planning 1.11-1.13, 1.23-1.33; Records 2.14, 2.17, 2.19.e; Rationale 3.1-3.4, 3.31

Planning 1.11, 1.12, 1.14, 1.23-1.33; Records 2.14, 2.17, 2.19; Rationale 3.1-3.3; Suggestions 3.4-3.8

Planning 1.11, 1.12, 1.14, 1.23-1.33; Records 2.14, 2.17, 2.19; Rationale 3.1-3.3; Suggestions 3.4-3.8

Planning 1.11, 1.12, 1.16, 1.23-1.33; Records 2.14, 2.17, 2.19; Rationale 3.1-3.3; Suggestions 3.4-3.13

Planning 1.11, 1.12, 1.16, 1.23-1.33; Records 2.14, 2.17, 2.19, 2.19.m; Rationale 3.1-3.3; Suggestions 3.4-3.13

Planning 1.11, 1.12, 1.20, 1.23-1.33; Records 2.14, 2.17; Rationale 3.1-3.3, 3.25-3.29; Suggestions 3.4-3.6, 3.30-3.33

Planning 1.11, 1.12, 1.15, 1.23-1.33; Records 2.14, 2.17; Rationale 3.1-3.3; Suggestions 3.7; Promotion 3.67, 3.70

Planning 1.11, 1.12, 1.18, 1.19, 1.23-1.33; Records 2.14, 2.17; Rationale 3.1-3.3; Suggestions 3.8

Records 2.14, 2.16-2.17

Planning 1.6, 1.10; Records 2.14, 2.17; Rationale 3.1-3.3; Suggestions 3.8, 3.11-3.13

Rationale 3.1-3.3, 3.25-3.27; Suggestions 3.7, 3.30, 3.31

Rationale 3.1-3.3; Suggestions 3.7-3.13; Records 2.14, 2.17

Rationale 3.1-3.3; Suggestions 3.4-3.8

QUESTIONS

REFERENCES

I.B.17. Are teachers or group leaders oriented to the site, possible activities, and potential problems prior to an Outdoor Classroom session?

Program Information 3.65, 3.67, 3.70

I.B.18. Has the staff developed a list of items that are available on loan for teachers to use in Outdoor Classrooms (audiovisuals, lesson plans, equipment, etc.)?

Records 2.16; Program Information 3.70

I.B.19. Is the historical perspective of current and potential resource problems a part of environmental education learning materials or activities used at the station?

Policy PMD III.B.4.a; Rationale 3.1-3.3; Suggestions 3.7

I.B.20. Are environmental education learning materials available in a progression of levels from awareness of environmental concepts to development of skills necessary for active problem solving?

Policy PMD IV.D.1; Rationale 3.1-3.3; Suggestions 3.9-3.13

Are learning materials or activities available that:

I.B.21. --identify and analyze attitudes and actions that have helped create resource problems in the area?

Rationale 3.1-3.3, 3.25-3.27; Suggestions 3.9, 3.10, 3.34

I.B.22. --help students explore possible action they could take toward solving environmental problems?

Rationale 3.1-3.3, 3.25-3.27; Suggestions 3.9, 3.31

I.B.23. --identify and analyze the values involved in resource management decisions at the station?

Rationale 3.1-3.3, 3.25-3.27; Suggestions 3.34, 3.35

Are learning materials, activities, or lesson plans available that help students practice the following problem-solving skills:

I.B.24. --identification of environmental problems at the station?

Policy PMD IV.D.1; Rationale 3.1-3.3; Suggestions 3.9-3.13

I.B.25. --collection of information about the field station environment?

Policy PMD IV.D.1; Rationale 3.1-3.3; Suggestions 3.9-3.13

I.B.26. --analysis of information collected at the field station?

Policy PMD IV.D.1; Rationale 3.1-3.3; Suggestions 3.9-3.13

I.B.27. --identification of alternate solutions to station environmental problems?

Policy PMD IV.D.1; Rationale 3.1-3.3; Suggestions 3.9-3.13

I.B.28. --evaluation of possible effects of each alternative?

Policy PMD IV.D.1; Rationale 3.1-3.3; Suggestions 3.9-3.13

I.B.29. Are specific examples of environmentally oriented learning materials displayed and explained to the teachers in EE workshops?

Suggestions and Resources 3.11-3.13

Involving the Audience

I.B.30. Do Outdoor Classroom learning activities involve students as active participants rather than spectators?

Rationale 3.25-3.30; Suggestions 3.32

I.B.31. Do Outdoor Classroom learning activities involve the individual with the environment?

Rationale 3.25-3.30; Suggestions 3.32

I.B.32. Is diverse sensory involvement a criterion for selecting learning activities for Outdoor Classrooms?

Rationale 3.25-3.30; Suggestions 3.32

I.B.33. Do teacher training workshops in EE bring teachers into direct involvement with the environment being studied?

Rationale 3.25-3.30; Suggestions 3.32, 3.12, 3.13

QUESTIONS

- I.B.34. Are suggestions for action-oriented learning activities available for teachers to use in Outdoor Classrooms?
- I.B.35. In teacher workshops is assistance offered in how to actively involve students with the environment?
- I.B.36. Are lesson plans or class activities available that involve subject matter from at least three disciplines (including one from the humanities)?
- I.B.37. Is attendance in teacher EE workshops encouraged for teachers in all subject areas?
- I.B.38. Do teacher training workshops in EE deal with necessary basic science without being dominated by the sciences?
- I.B.39. Is one objective of teacher workshops to show how any subject can be taught "environmentally"?
- I.B.40. Do promotional media for EE workshops stress the fact that teachers need not become specialists in order to teach environmentally?
- I.B.41. Do EE activities stress a "problem-oriented" approach rather than a "subject-matter" approach?

REFERENCES

- Rationale 3.25-3.31; Suggestions 3.12, 3.13
- Suggestions 3.11-3.13
- Suggestions 3.32
- Suggestions 3.11-3.13, 3.32
- Suggestions 3.11-3.13, 3.32
- Suggestions 3.12, 3.32
- Suggestions 3.12, 3.32
- Policy PMD IV.D.1; Suggestions 3.32

Creating Non-threatening Environments

- I.B.42. Are service-provided learning materials free of religious, cultural, sexual, or ethnic biases?
- I.B.43. Is hunting (or any other physically threatening activity) excluded from areas used for outdoor classrooms?
- I.B.44. Are teachers or other leaders using outdoor classroom sites warned of any potential safety hazards?
- I.B.45. Are Outdoor Classroom sites and facilities designed and maintained to insure visitor safety?
- I.B.46. Are Outdoor Classroom learning activities structured to provide participants with some degree of success?

- Rationale/Suggestions 3.76-3.77
- 8 RM 3.7; Rationale/Suggestions 3.76-3.77
- PMD Priority III.A.1; Rationale/Suggestions 3.76-3.77
- 8 RM 3.7, 9 RM 2 Exhibit 1; Rationale/Suggestions 3.76-3.77
- Rationale/Suggestions 3.75-3.77

INTERPRETATIONPlanning

- II.A.1. Does this station provide interpretive media or facilities for visitors?
- II.A.2. Has an I & R (or master) plan been completed for your station that includes a section on Interpretation?
- II.A.3. Is the Interpretation section of the I & R (or master) plan reviewed and updated (if necessary) annually?
- II.A.4. Have FWS policies affecting I & R programs been analyzed and incorporated into procedures for delivering interpretive services?
- II.A.5. Have resources used in preparing interpretive presentations and media been inventoried and a bibliography prepared?

- Assessing Potential 1.6-1.22
- 8 RM 4.5; Planning 1.1-1.33
- 8 RM 4.5; Rationale 1.2; Policy PMD IV.D.2.(1)
- Policy PMD II.C, Policy PMD III.B.4; Planning 1.5-1.7, 1.10; The Plan 1.23-1.35
- Records 2.14-2.16

QUESTIONS

- II.A.6. Have cultural and natural resources with potential for interpretation been identified in the I & R (or master) plan?

Evaluation

Are Interpretive activities and media reviewed and are records kept of:

REFERENCES

8 RM 4.5; Data Collection 1.5-1.9

- II.A.7. --themes and objectives addressed in the last year? Evaluation 2.1-2.4, 2.12; Records 2.14-2.16; 2.19
- II.A.8. --resource concepts addressed in the last year? Evaluation 2.1, 2.4, 2.12; Records 2.14, 2.15, 2.19
- II.A.9. --interpretive techniques used? Records 2.14-2.17
- II.A.10. --effectiveness of interpretive techniques chosen to interpret various concepts? Evaluation 2.18, 2.19.e,g,h,i,j,k,l,m,n,o,p,q,v
- II.A.11. --audience evaluation of interpretive activities (either formal or informal)? Evaluation 2.18, 2.19.e,m,n,o,v
- II.A.12. --staff available for interpretation (full or part-time or volunteer) including hours and expertise? Records 2.18
- ~~II.A.13. --schedules of interpretive activities? Records 2.14-2.18~~
- II.A.14. --interpretive media available at the station? Records 2.14, 2.16
- II.A.15. --types of self-guided (media-guided) interpretive activities? Records 2.14-2.16
- II.A.16. --available facilities, and equipment (FWS and concession)? Inventories 1.8-1.10
- Is the Interpretive program evaluated on an annual basis according to objectives in the I & R (or master) plan and recommendations made for:
- II.A.17. --new Program areas? Planning 1.1-1.33; Evaluation 2.1-2.5, 2.12-2.15, 2.19
- II.A.18. --staff additions or changes (full-time, part-time, volunteer)? Evaluation 2.1, 2.7; Methods 2.12, 2.19.w,x,y
- II.A.19. --staff training needs (full-time, part-time, volunteer)? Evaluation 2.1, 2.7; Methods 2.12, 2.19.w,x,y
- II.A.20. --research needed on audience characteristics? Planning 1.12-1.22, 1.29; Rationale 2.1, 2.5, 2.6; Methods 2.9, 2.12, 2.13, 2.17, 2.19.a-q
- II.A.21. --priorities in adding new activities? Planning 1.8-1.10, 1.30; Evaluation 2.1-2.6, 2.12, 2.17; Carrying Capacity 3.61-3.64
- II.A.22. --additions or changes in media? Planning 1.8, 1.9; Evaluation 2.1, 2.5, 2.8-2.17; Methods 2.19.g,h,i,j,k,m,n,q,v
- II.A.23. --additions or changes in facilities or equipment? Evaluation 2.1-2.5, 2.8-2.17
- II.A.24. Are interpretive exhibits and signs inspected regularly to determine if these are in good condition? Evaluation 2.1, 2.8-2.16
- II.A.25. Has the content of all media and presentations been assessed to determine if these are based on accurate information? Planning 1.8, 1.9, 1.29; Evaluation 2.5, 2.9, 2.10; Methods 2.19.s,u

QUESTIONS

- II.A.26. In the last year were all scheduled interpretive activities conducted as scheduled?
- II.A.27. Are interpretive tours, demonstrations, and presentations (by FWS staff or concessionaires) regularly critiqued by supervisory personnel during the visitor season?

Using FWS Resources

- II.A.28. Are resource concepts important to FWS and the station given high priority in planning the content of interpretive presentations and media?

- II.A.29. Are interpretive activities supportive of management plans to solve station or area resource problems?

Has the staff considered how Interpretive activities could help solve management problems in:

- II.A.30. --crowd control?
- II.A.31. --law enforcement?
- II.A.32. --litter?
- II.A.33. --vandalism?
- II.A.34. --pollution?
- II.A.35. --habitat problems?
- II.A.36. --over-use of an area?
- II.A.37. Was the impact on the field station environment considered in the choice of interpretive media and sites?

Setting Objectives

- II.B.1. Are objectives written for each staff-led interpretive presentation, guided tour, or demonstration?
- II.B.2. Do the above objectives state or include an expected outcome for each activity?
- II.B.3. Are objectives written for each self-directed (media directed) interpretive exhibit, guided tour, or other activity?
- II.B.4. Do the above objectives state or include an expected outcome for each activity?
- II.B.5. Are the objectives measurable?
- II.B.6. Are the steps for accomplishing each objective identified in a written lesson or activity plan?

Audience Identification

Have the following characteristics of the audience been identified and incorporated into the content or interpretive technique chosen for interpretation:

- II.B.7. --amount of time spent on site?

REFERENCES

Records 2.14-2.15

Evaluation 2.7, 2.12, 2.14, 2.18, 2.19.w,x,y

Policy PMD III.B.4.a,b, IV.D.1; Planning 1.1-1.33; Rationale 3.25-3.26, 3.39-3.40

8 RM 4.6; Policy PMD III.B.4.b; Planning 1.1-1.33

8 RM 4.6

8 RM 4.6.G; Suggestions 3.55, 3.61-3.64

8 RM 4.6.D; Suggestions 3.55, 3.61-3.64

Policy PMD III.B.b.b; Suggestions 3.55, 3.61-3.64

8 RM 4.6.A; Suggestions 3.55, 3.61-3.64

Policy PMD III.B.4.b; Suggestions 3.55, 3.61-3.64

8 RM 4.6.C; Suggestions 3.55, 3.61-3.64

8 RM 4.6.B; Suggestions 3.55, 3.61-3.64

Planning 1.1-1.33

Planning 1.23-1.25; Writing 1.25

Planning 1.23-1.25; Writing 1.25

Planning 1.23-1.25; Writing 1.25

Planning 1.23-1.25; Writing 1.25

Evaluation 2.2-2.4

Planning 1.2-1.4, 1.23, 1.27, 1.28

Planning 1.11, 1.12, 1.18, 1.19, 1.23-1.33; Records 2.14, 2.17; Methods 2.19.e,f,h,m,n; Rationale 3.1-3.3; Suggestions 3.20

QUESTIONS

- II.B.8. --type of visiting group (families, couples, etc.)?
- II.B.9. --average age and education level?
- II.B.10. --frequency of visits?
- II.B.11. --whether most visitors are local people or tourists?
- II.B.12. --predominant foreign language?
- II.B.13. --reasons for visiting field station?
- II.B.14. --physical or mental limitations?
- II.B.15. --interpretive activities pursued?
- II.B.16. Are informal measurements taken of the audience's attention to interpretive presentations or their retention of concepts presented?

Relating Program to Audience

- II.B.17. Are the terminology, examples, and comparisons used in interpretive media within the probable vocabulary and experience of the visitor?
- II.B.18. Are the terminology, examples, and comparisons used in interpretive presentations within the probable vocabulary and experience of the visitor?
- Are interpretive media available for several different audiences such as:
- II.B.19. --pre-school children?
- II.B.20. --elementary age children?
- II.B.21. --youth?
- II.B.22. --family groups?
- II.B.23. --adults?
- II.B.24. --older adults?
- II.B.25. Do FWS personnel keep lists of relevant questions asked by station visitors?
- II.B.26. Are visitors' questions used in improving interpretive media or guided activities?
- II.B.27. Are interpretive activities scheduled at times convenient to station users?
- II.B.28. Are visitors encouraged to offer comments and suggestions concerning interpretive activities?
- II.B.29. Are some exhibits changed seasonally to interpret changes in fish/wildlife populations or habitats?

REFERENCES

- Planning 1.11, 1.12, 1.14, 1.23-1.33; Records 2.14, 2.17, 2.19; Methods 2.19.e,f,h,m,n; Rationale 3.1-3.3; Suggestions 3.14-3.24, 3.51
- Planning 1.11-1.13, 1.23-1.33; Records 2.14, 2.17; Methods 2.19.d,e,m,p; Rationale 3.1-3.4, 3.14-3.18, 3.52
- Planning 1.11, 1.19, 1.23-1.33; Records 2.14, 2.17; Methods 2.19.e,f,m; Suggestions 3.14, 3.19, 3.20
- Planning 1.11, 1.12, 1.15, 1.23-1.33; Records 2.14, 2.17; Methods 2.19.a,e,m; Rationale 3.1-3.3; Suggestions 3.19; Promotion 3.67
- Planning 1.11, 1.12, 1.20, 1.23-1.33; Records 2.14, 2.17; Methods 2.19.m,n,p; Rationale 3.1-3.3; Suggestions 3.14
- Planning 1.11, 1.12, 1.21, 1.23-1.33; Records 2.14, 2.17; Methods 2.19.a,e,f,h,j,l,m,n; Rationale 3.1-3.33, 3.25-3.29; Suggestions 3.20-3.24
- Planning 1.11, 1.12, 1.20, 1.23-1.33; Records 2.14, 2.17; Methods 2.19.m,n,p; Rationale 3.1-3.3, 3.25-3.29; Suggestions 3.16-3.18, 3.39-3.40
- Planning 1.11, 1.12, 1.21, 1.23-1.33; Records 2.14, 2.17; Methods 2.19.a,e,f,h,j,l,m,n
- Planning 1.11, 1.12, 1.22; Evaluation 2.1, 2.2, 2.5, 2.9-2.10, 2.12-2.17; Methods 2.19.g,h,i,k,n,q; Records 2.9, 2.12, 2.17
- Policy PMD IV.D.1.d; Data Collection 1.11-1.22; Rationale 3.1-3.3; Suggestions 3.14-3.24, 3.39-3.47
- Policy PMD IV.D.1.d; Data Collection 1.11-1.22; Rationale 3.1-3.3; Suggestions 3.14-3.24, 3.49-3.50
- Policy PMD IV.D.1.d; Rationale/Suggestions 3.7, 3.15, 3.20-3.24
- Policy PMD IV.D.1.d; Rationale/Suggestions 3.7, 3.20-3.24
- Policy PMD IV.D.1.d; Rationale/Suggestions 3.7, 3.20-3.24
- Policy PMD IV.D.1.d; Rationale/Suggestions 3.51
- Policy PMD IV.D.1.d; Rationale/Suggestions 3.20-3.24
- Policy PMD IV.D.1.d; Rationale/Suggestions 3.14-3.24, 3.52-3.53
- Records 2.14-2.15; Evaluation 2.9, 2.5
- Records 2.14-2.15; Evaluation 2.9, 2.5
- Planning 1.5-1.28
- Policy PMD IV.D.1.j; Evaluation 2.5, 2.9, 2.14-2.17, 2.19.n,o
- Rationale 3.25-3.29, 3.39-3.40, 3.46

QUESTIONS

- II.B.30. Are interpretive opportunities rotated within season (to interest repeat visitors) as well as season to season?
- II.B.31. Are some interpretive activities designed for a local audience?
- II.B.32. Are interpretive tours or activities available for visitors with physical limitations?
- II.B.33. Are interpretive media or activities available for the nonsighted?
- II.B.34. Are interpretive media or activities available for individuals with hearing impairments?
- II.B.35. Are any staff able to speak the predominant foreign language of station visitors?

Presenting Whole Concepts

- II.B.36. Are interpretive brochures written to convey relative concepts rather than strictly facts?
- II.B.37. Is one main theme expressed in each interpretive brochure?
- II.B.38. Is one main theme expressed in each interpretive exhibit or display?
- II.B.39. Is one main theme expressed in each interpretive presentation?

Involving the Audience

- II.B.40. Do interpretive activities involve visitors as participants rather than spectators?
- II.B.41. Do interpretive activities involve the visitor with the field station environment?
- II.B.42. Are the cultural themes used in interpretive media or presentations representative of significant cultural characteristics of the site or area?
- II.B.43. Are the natural resource themes used in interpretive media or presentations representative of significant or critical natural resource characteristics of the station?
- II.B.44. Is the historical perspective of current or potential resource problems presented in some interpretive media or presentations?
- II.B.45. Do any interpretive materials address the role individuals can play in resource management?
- II.B.46. Do criteria for site selection (trails, viewing areas, blinds, and so on) include the greatest possible diversity of visual, tactile, and auditory experiences?
- II.B.47. Are brochures prepared without long blocks of continuous text?
- II.B.48. Are interpretive brochures or other media written to motivate the audience to actively investigate the subject being described?
- II.B.49. Do interpretive media or presentations attempt to involve the audience using senses beyond sight?

REFERENCES

Rationale 3.25-3.29

Rationale 3.1-3.3; Suggestions 3.19, 3.25-3.29

Policy PMD III.B.1.f; Rationale 3.1-3.33; Suggestions 3.14-3.18

Policy PMD III.B.4.e; Rationale 3.1-3.33; Suggestions 3.14-3.18

Policy PMD III.B.4.e; Rationale 3.1-3.33; Suggestions 3.14-3.18

Policy PMD III.B.4.e; Rationale 3.1-3.33; Suggestions 3.14-3.18

Rationale/Suggestions 3.20

Rationale/Suggestions 3.20-3.21

Rationale/Suggestions 3.20-3.23

Rationale/Suggestions 3.20-3.21, 3.49

Policy PMD II.C; Rationale 3.25-3.29, 3.39-3.49

Policy PMD II.C; Rationale 3.25-3.29, 3.39-3.48

Policy PMD II.C, III.B.4.a,b, IV.D.1; Rationale 3.25-3.29, 3.39-3.41

Policy PMD II.C, III.B.4.a,b, IV.D.1; Rationale 3.25-3.29, 3.39-3.41; Suggestions 3.7

Policy PMD II.C, III.B.4.a,b, IV.D.1; Rationale 3.25-3.29, 3.39-3.41; Suggestions 3.7

Policy PMD II.C, III.B.4.a,b, IV.D.1; Rationale 3.25-3.29, 3.39-3.41

Policy PMD II.C, III.B.4.a,b, IV.D.1; Rationale 3.25-3.29, 3.39-3.41; Suggestions 3.48

Policy PMD II.C, III.B.4.a,b, IV.D.1; Rationale 3.25-3.29, 3.39-3.41; Suggestions 3.44-3.45

Policy PMD II.C, III.B.4.a,b, IV.D.1; Rationale 3.25-3.29, 3.39-3.41; Suggestions 3.42, 3.44

Policy PMD II.C, III.B.4.a,b, IV.D.1; Rationale 3.25-3.29, 3.39-3.41; Suggestions 3.42-3.50

QUESTIONS

- II.B.50. The FWS enforces many rules that restrict use of and protect the resource; are the reasons for these rules interpreted to the public in a variety of ways?

REFERENCES

Rationale/Suggestions 3.55

Creating Non-threatening Environments

- II.B.51. Are safety hazards identified in interpretive media or presentations?
- II.B.52. Is hunting (or any other physically threatening activity) excluded from areas used for interpretive trails or other interpretive sites?
- II.B.53. Is the content of all interpretive presentations and media regularly monitored to insure that these are free of sexual, religious, cultural, or ethnic biases?
- II.B.54. Do FWS staff encourage visitors to ask questions during presentations?
- II.B.55. Do FWS staff correct erroneous answers or responses from audience members without causing them embarrassment?

Priority PMD III.A.1; Program Information 3.65, 3.76-3.78

Rationale 3.76

Rationale/Suggestions 3.77

Rationale 3.77; Suggestions 3.49-3.50

Rationale 3.77; Suggestions 3.49-3.50

RECREATIONPlanning

- III.A.1. Are recreational opportunities offered to the public?
- III.A.2. Have objectives for recreation been written?
- III.A.3. Has an I & R (or master) plan been written for the station that includes a section on Recreation?
- III.A.4. Is the recreation part of the I & R plan updated as part of the annual work planning process?

Policy PMD I.B.3; Assessing Potential 1.6-1.22

Planning 1.23-1.25; Writing 1.25

Planning 1.1-1.33

Policy PMD IV.B.1; Rationale 1.2

Does the Recreation Plan incorporate:

- III.A.5. --FWS policies affecting recreation?

Authority PMD I.B.3; Goals and Objectives PMD II.A; Data Collection/Analysis 1.5-1.10

- III.A.6. --FWS priorities in recreation?

Policy PMD III.A.3.a; Data Collection/Analysis 1.5-1.10

Does the Recreation Plan analyze:

- III.A.7. --sites with potential for recreation?

Data Collection/Analysis 1.5-1.10

- III.A.8. --how recreation may affect sensitive areas and rare environments?

Data Collection/Analysis 1.5-1.10

- III.A.9. --cooperative agreements for recreation with other agencies?

Data Collection/Analysis 1.5-1.10

- III.A.10. Are continued effort and information provided to encourage concessionaires to aid in recreation programming at the station?

Policy PMD IV.D

- III.A.11. If FWS recreational opportunities duplicate those offered by other agencies in the vicinity, is the duplication justified in writing?

Policy PMD II.A

QUESTIONS

Protecting the Resource

- III.A.12. Have areas where deterioration of the resource has occurred because of recreational activities been assessed and monitored?
- III.A.13. Are the effects of non-wildlife oriented recreation being monitored where a potential conflict with wildlife has been identified?
- III.A.14. Have the effects of vandalism been identified and damage assessed in written reports?
- III.A.15. Have historical consumptive uses of the resource (e.g. hunting, fishing, etc.) been identified and appropriate controls enforced?
- III.A.16. Are identified recreation-use problems addressed in educational/interpretive materials?
- Has the use capacity of the following facilities/areas been identified:
- III.A.17. --picnic areas?
- III.A.18. --camping areas?
- III.A.19. --trails?
- III.A.20. --boating areas?
- III.A.21. --swimming areas?
- III.A.22. --wilderness areas?
- III.A.23. --fishing sites?
- III.A.24. --hunting areas?
- III.A.25. --visitor center?
- III.A.26. Is the user capacity of the above facilities/areas enforced through regulations or physical/psychological barriers?
- III.A.27. Has assistance or cooperation been sought from other agencies or organizations to meet demands for recreation on a regional basis?
- III.A.28. Do recreational activities promote the station resources?
- III.A.29. Is hunting conducted in accordance with the station management plan?

Audience Identification

- III.B.1. Have the following characteristics of recreational visitors been identified and incorporated into plans for recreation on the station:
- III.B.1. --age?
- III.B.2. --residence?
- III.B.3. --frequency of visits?

REFERENCES

Data Collection/Analysis 1.5-1.10, 1.29, 2.8-2.14

Policy PMD IV.B.1

Evaluation 2.8-2.12

Data Collection/Analysis 1.8-1.10

Planning 1.23-1.33

Rationale/Suggestions 3.60-3.64

Rationale/Suggestions 3.60-3.64

Rationale/Suggestions 3.60-3.64

Rationale/Suggestions 3.60-3.64

Rationale/Suggestions 3.60-3.64

Rationale/Suggestions 3.60-3.64

Rationale/Suggestions 3.60-3.64

Rationale/Suggestions 3.60-3.64

Rationale/Suggestions 3.60-3.64

Rationale 3.25-3.29, 3.55

Policy PMD IV.B.1

Policy PMD III.B.2

Policy PMD III.B.2

Planning 1.11-1.13, 1.23-1.33; Records 2.14, 2.17, 2.19.e,f; Rationale 3.25, 3.27, 3.54; Methods 2.19.d,e,m,p

Planning 1.11, 1.12, 1.15, 1.23-1.33; Records 2.14, 2.17; Rationale 3.25, 3.27, 3.54; Methods 2.19.a,e,m

Promotion 3.67
Planning 1.11, 1.17, 1.19; Records 2.14, 2.17; Methods 2.19.e,f,m

QUESTIONS

REFERENCES

III.B.4. --types of social grouping (family, single, etc.)?

Planning 1.11, 1.12, 1.14, 1.23-1.33; Records 2.14, 2.17; Methods 2.19.d,e,m,n; Rationale 3.25, 3.27, 3.54

III.B.5. --reasons for visiting station and activities pursued?

Planning 1.11, 1.12, 1.21, 1.23-1.33; Records 2.14, 2.17; Methods 2.19.a,e,f,h,j,l,m,n & 2.19.m,n,p; Rationale 3.25, 3.27, 3.54

III.B.6. --time spent pursuing various activities?

Planning 1.11, 1.12, 1.18, 1.23-1.33; Records 2.14, 2.17; Methods 2.19.e,f,h,n

III.B.7. --evaluation of their experience at the station?

Planning 1.11, 1.12, 1.22-1.33; Records 2.14, 2.17; Methods 2.19.e,h,l,m,n,o

Developing Programs for the Audience

III.B.8. Are both scheduled and self-directed activities offered?

Rationale 3.25, 3.27, 3.54

III.B.9. Are recreational facilities and sites accessible?

Policy PMD III.B.1.f; Rationale 3.76

III.B.10. When it is necessary to curtail certain behavior or limit use of an area, has the staff considered using psychological or natural barriers rather than imposing and enforcing legal restrictions?

Rationale 3.55

Wildlife/Wildland Observation

III.B.11. Does the station provide plant and wildlife identification information?

Rationale 3.25-3.29, 3.54; Suggestions 3.58

III.B.12. Do wildlife/wildlands trails go through areas that show a variety of wildlife and habitats?

Rationale 3.25-3.29, 3.54; Suggestions 3.48, 3.57

III.B.13. Are wildlife/wildlands observation trails provided in varying lengths and endurance requirements?

Rationale 3.25-3.29, 3.54; Suggestions 3.56

III.B.14. Are observation blinds/points provided so visitors can better view wildlife?

Rationale 3.25-3.29, 3.54; Suggestions 3.58

III.B.15. Are wildlife/wildlands observation areas designed or selected to provide visitors a high quality wildlife/wildlands observation experience?

Rationale 3.25-3.29, 3.54; Suggestions 3.57

III.B.16. Does the station allow public access to areas of the site which are representative of the natural resources of the station?

Rationale 3.25-3.29, 3.54; Suggestions 3.57

III.B.17. Is the station open to the public early enough in the morning and late enough in the evening to take advantage of peak viewing hours of wildlife activity?

Rationale 3.25-3.29, 3.54; Suggestions 3.58

III.A.18. Is the natural landscape as much in evidence as possible at sites for activities such as camping, picnicking?

Policy PMD III.B.2.b; Rationale 3.25-3.29, 3.54; Suggestions 3.57

III.A.19. Are photography, sketching, and painting encouraged as aids to observing wildlife?

Rationale 3.25-3.29, 3.54; Suggestions 3.58

III.B.20. Are interpretive media available at appropriate locations to aid in identification and appreciation of the station's wildlife/wildlands?

Policy PMD III.B.2.h; Rationale 3.25-3.29, 3.54; Suggestions 3.58

III.B.21. Are visitors instructed in procedures to follow to increase their chances of seeing wildlife?

Rationale 3.25-3.29, 3.54; Suggestions 3.58

QUESTIONS

REFERENCES

- III.B.22. Is the challenge of seeing or hearing some species of wildlife emphasized?

Rationale 3.25-3.29, 3.54; Suggestions 3.56

Hunting

- III.B.23. Is hunting permitted?

Policy PMD III.B.2.a

If the answer to II.B.23 was "no," proceed to III.B.32.

Is interpretive or informational material provided that addresses:

- III.B.24. --the regulatory nature of hunting?

Policy PMD III.B.2.a; Suggestions 3.58

- III.B.25. --the ethics of hunting?

Policy PMD III.B.2.a; Suggestions 3.58

- III.B.26. Has the staff considered how hunting activities affect the wildlife observation experience and made adjustments necessary to insure the quality of both hunting and wildlife observation?

Policy PMD III.B.2.a; Suggestions 3.60-3.64

- III.B.27. Have conflicts between hunting and nonhunting uses of an area been reduced or eliminated by zoning, facility location, or other regulations?

Policy PMD III.B.2.a; Suggestions 3.60-3.64

- III.B.28. Was aesthetics considered in selecting areas that are set aside for hunting?

Policy PMD III.B.2.a; Policy PMD III.B.2.b; Suggestions 3.57

- III.B.29. Has the staff considered how the quantity of hunters affects the hunting experience?

Policy PMD III.B.2.a; Suggestions 3.60-3.64

- III.B.30. Have appropriate controls been enforced to limit numbers of hunters (if needed)?

Policy PMD III.B.2.a; Suggestions 3.60-3.64

- III.B.31. Does the public use or hunt plan provide for hunter education or orientation?

Policy PMD III.B.2.a; Safety 3.77-3.78

Camping

- III.B.32. Are camping areas provided?

- III.B.33. Are individual campsites designated?

Suggestions 3.60-3.64

- III.B.34. Are natural barriers provided between camp sites?

Policy PMD III.B.2.b; Suggestions 3.57, 3.60

Fishing

- III.B.35. Is fishing permitted?

Policy PMD III.B.2.a

- III.B.36. Are fishermen provided information on species identification or description?

Suggestions 3.58

- III.B.37. Has the staff considered how the quantity of fishermen affects the fishing experience?

Suggestions 3.60-3.64

- III.B.38. Have appropriate controls been enforced to limit numbers of fishermen, if needed?

Suggestions 3.60-3.64

Safety

- III.C.1. Have natural safety hazards been identified, sited on base maps, and their severity appraised?

8 RM 13.4; Policy PMD III.B.2.i; Planning 1.5-1.33; Safety 3.76-3.78; Evaluation 2.10

- III.C.2. Have safety hazards in public buildings and other manmade features been identified and their severity appraised?

8 RM 13.3, 13.4; Policy PMD III.B.2.i; Planning 1.5-1.33; Evaluation 2.1, 2.8, 2.10; Safety 3.76-3.78

QUESTIONS

REFERENCES

- III.C.3. Have safety procedures and safety monitoring techniques been identified in a safety plan, or the I & R (or master) plan?
- Have safety features been incorporated in the development, management, and operation of:
- III.C.4. --auto tour routes?
- III.C.5. --picnic sites and facilities?
- III.C.6. --swimming beaches or areas?
- III.C.7. --visitor overlooks (towers, etc.)?
- III.C.8. --boating and fishing docks?
- III.C.9. --hunting blinds?
- III.C.10. --hunting areas?
- III.C.11. --parking lots?
- III.C.12. --walking or bicycle trails?
- III.C.13. --visitor center?
- III.C.14. --waterways?
- III.C.15. Are law enforcement and regulatory responsibilities handled by qualified, trained personnel?
- III.C.16. Are some personnel trained in first aid techniques?
- III.C.17. Is the number of staff trained in first aid appropriate to the visitor use level?
- III.C.18. Are first aid supplies and equipment appropriate for visitor use levels?

8 RM 13, 8 RM 15 Search and Rescue; Policy PMD III.B.2.i; Planning 1.1-1.33; Evaluation 2.1, 2.8, 2.10; Safety 3.76-3.78

8 RM 13, 9 RM 2 Exhibit 1; Policy PMD III.B.2.i; Planning 1.1-1.33; Evaluation 2.1, 2.8-2.14; Safety 3.76-3.78
Same as III.C.4

Same as III.C.4

Same as III.C.4

Same as III.C.4

Same as III.C.4

Same as III.C.4

Same as III.C.4

Same as III.C.4

Same as III.C.4

Same as III.C.4

8 RM 14; Safety 3.76-3.78

Safety 3.76-3.78

Safety 3.76-3.78

Safety 3.76-3.78

PROGRAM INFORMATION

Public Involvement

- IV.A.1. Has the station sought public involvement in management decisions within the last five years?
- IV.A.2. Has a procedure been identified for seeking public involvement?
- IV.A.3. When seeking public involvement in management decisions, are clearly defined objectives written for that involvement?
- IV.A.4. Does the staff define the "public" whose involvement is sought?

Policy PMD III.B.1.b, III.B.4.d

Planning 3.73-3.75, also 1.1-1.33

Planning 3.73-3.75, also 1.1-1.33

Planning 3.73-3.75, also 1.1-1.33

QUESTIONS

- IV.A.5. Does the public sought include supporters and critics?
- IV.A.6. Are notices of public involvement activities publicized through a variety of media?
- IV.A.7. Is there adequate lead time for these announcements?
- IV.A.8. Is feedback on results of public input provided to the public?
- IV.A.9. Are minutes or other records available of public involvement activities?
- IV.A.10. Have the opinions of station visitors been sought on their assessment of the present I & R Program and what additional activities or opportunities are desired?

REFERENCES

- Planning 3.73-3.75, also 1.1-1.3
- Planning 3.73-3.75, also 1.1-1.3
- Planning 3.73-3.75, also 1.1-1.3
- Planning 3.73-3.75, also 1.1-1.3
- Planning 3.73-3.75, also 1.1-1.3
- Planning 3.73-3.75, also 1.1-1.3

Program Information

- IV.A.11. Are station identification signs posted at all official public entrances to the station? PMD Priority III.A.1; Rationale/Suggestions 3.65
- IV.A.12. Is the name of the station and the U.S. Fish and Wildlife Service accurately identified on the entrance sign(s)? Policy PMD III.B.1.h; Rationale/Suggestions 3.65
- IV.A.13. Are visitors informed of what opportunities are available to them on the field station? PMD Priority III.A.1; Rationale/Suggestions 3.65
- IV.A.14. Are visitors informed of what to expect from specific opportunities at the station? Rationale/Suggestions 3.65
- IV.A.15. Are visitors informed of what is expected of them as visitors (e.g. acceptable activities, etc.)? PMD Priority III.A.1; Rationale/Suggestions 3.65
- IV.A.16. Do signs or informational brochures warn of potential safety hazards at the field station? PMD Priority III.A.1; Rationale/Suggestions 3.65
- IV.A.17. Is orientation to the station available in some form whether or not FWS personnel are on duty? Rationale/Suggestions 3.65
- IV.A.18. Are maps or written directions for finding the field station included in station brochures that are distributed at off-station locations? Rationale/Suggestions 3.66-3.67
- IV.A.19. Is signing adequate for directing visitors to the station? Rationale/Suggestions 3.65
- IV.A.20. Is the field station accurately plotted on maps distributed by state or city tourism offices, auto clubs, highway department, etc.? Rationale/Suggestions 3.65-3.67
- IV.A.21. Is there a "welcome" on public entrance signs (or some indication that visitation is encouraged)? Rationale/Suggestions 3.65, 3.76-3.77
- IV.A.22. Is a formal welcome to the station a part of every staff-led presentation? Rationale/Suggestions 3.65, 3.76-3.77
- IV.A.23. Is some special effort made each year to invite the public to observe resource management procedures at the station (e.g. an open house, waterfowl week, etc.)? Rationale/Suggestions 3.65, 3.69

QUESTIONS

- IV.A.24. Do personnel routinely promote station activities in speeches to civic groups and similar meetings with the public?
- IV.A.25. Is the public informed of changes in fish/wildlife populations or habitat conditions (e.g. news releases)?
- IV.A.26. Are scheduled activities promoted at least two weeks in advance?
- IV.A.27. Is the regular I & R Program consistently promoted by providing information in the same locations and with approximately the same lead time?
- IV.A.28. Is a variety of methods used to promote participation in and awareness of the I & R Program?
- IV.A.29. Are youth, public service, or special interest groups informed of educational or recreational opportunities at the field station?
- IV.A.30. Are local schools informed of Outdoor Classroom opportunities, teacher workshops in EE, and other opportunities for assistance in EE off site?
- IV.A.31. Are current brochures on station recreation and interpretive activities available in such places as area tourist information centers, sporting goods stores, lodging facilities, and auto club offices?

REFERENCES

Rationale/Suggestions 3.65, 3.68

8 RM 2.3; Rationale/Suggestions 3.65, 3.66, 3.71

Rationale/Suggestions 3.65-3.72

Rationale/Suggestions 3.65-3.72

Rationale/Suggestions 3.65-3.72

Rationale/Suggestions 3.65, 3.70

8 RM 3.8; Rationale/Suggestions 3.70

Rationale/Suggestions 3.65-3.67

DEDICATED AREAS

- V.A.1. Has the use of dedicated areas been considered in planning educational or recreational activities?
- V.A.2. Have plans been implemented for making dedicated areas available to the public for education or enjoyment, where such use is consistent with management objectives?
- V.A.3. Have programs to identify those resources that may require protection as dedicated areas been initiated?
- V.A.4. Has a survey been conducted by a professional archeologist or historian (as appropriate) to identify sites and objects?
- V.A.5. Have arrangements been made for the protection of those areas?
- V.A.6. Have the guidelines for cultural resource management been reviewed and applied to the I & R or master plan?
- V.A.7. Does the cultural resource management plan detail actions necessary for the conservation, stabilization, preservation, or restoration of sites, structures, buildings, and objects?
- V.A.8. Does the cultural resource management plan consider a variety of sources of expertise for surveys, histories, curation, and so on as appropriate?

5 RM 16.16, 6 RM 8.9; Policy PMD III.B.3.e,f; Planning 1.1-1.33

5 RM 16.16, 6 RM 8.9, 6 RM 8.11; Policy PMD III.B.3.f; Planning 1.1-1.33

4 RM 5.9, 5 RM 16; PMD Priority III.A.3.b; Policy PMD III.B.3.b, IV.C.1; Planning 1.1-1.33

4 RM 5.9, 5 RM 16; PMD Priority III.A.3.b; Policy PMD III.B.3, IV.C.1

4 RM 5.9, 5 RM 16.12; PMD Priority III.A.3.b; Policy PMD III.B.3, IV.C.1

4 RM 5.9, 5 RM 16; Policy PMD III.B.3; Planning 1.1-1.33

4 RM 5.9, 4 RM 5 Exhibits 1-4, 5 RM 16; Policy PMD III.B.3; Planning 1.1-1.33

4 RM 5 Exhibits 1-4, 5 RM 16; Policy PMD III.B.3.b; Planning 1.1-1.33

QUESTIONS	REFERENCES
V.A.9. Does the station's public use plan include the preparation of a cultural resource management plan consistent with FWS guidelines?	4 RM 5.9, 5 RM 16; Policy PMD III.B.3; Planning 1.1-1.33
V.A.10. Has an archeological and historic resource survey been included as part of any construction or development project?	4 RM 5.9, 5 RM 16; Policy PMD III.B.3.a-c
V.A.11. Have those properties (districts, buildings, structures, sites, and objects) eligible for listing in the National Register of Historic Places actually been nominated?	5 RM 16; esp 16.17; Policy PMD III.B.3.a-c
V.A.12. Has the Archaeological Resources Protection Act (ARPA) of 1979 (and its implementing regulations) been reviewed to assure appropriate protection of archeological resources?	5 RM 16.6; Policy PMD III.B.3
V.A.13. Does the station's public use plan require acquisition of an Antiquities Permit as well as a Special Use Permit prior to any archeological or paleontological research?	5 RM 16.13; Planning 1.1-1.33
V.A.14. Is the public fully informed at every station that in accordance with the ARPA of 1979, 1906 Antiquities Act, and Service policy, no archeological or paleontological specimens may be collected?	5 RM 16.6, 16.12, 16.14; PMD Priority III.A.1; Program Information 3.65
V.A.15. Is the public fully informed at every station that inadvertent or intentional destruction of any part of an archeological site could be considered either a civil or criminal violation of the law?	5 RM 16.6, 16.12, 16.16; PMD Priority III.A.1; Program Information 3.65
V.A.16. Have past and recent instances of vandalism been identified and damage assessed in a written summary?	5 RM 16.7; Planning 1.1-1.33; Evaluation 2.8-2.14
V.A.17. Is the station's personnel aware of the Service's law enforcement responsibilities in protecting archeological and paleontological resources?	5 RM 16.7, 16.14
V.A.18. Does the public use plan provide for visitor education and orientation regarding the environmental role of any protection afforded historic and archeological resources?	5 RM 16.16; Planning 1.1-1.33
V.A.19. Does the station regularly check with the Regional Historic Preservation Officer to inform this official of new historic, archeological, and paleontological finds or of threatening conditions which may affect these resources?	5 RM 16.7, 16.9, 16.12, 16.15, 16.19; PMD Priority III.A.3.b; Policy PMD III.B.3, IV.D.1
V.A.20. Does the station regularly review with the Regional Historic Preservation Officer to develop policies and guidelines regarding management of historic and archeological resources?	5 RM 16.7, 16.12; PMD Priority III.A.3.b; Policy PMD III.B.3, IV.D.1
V.A.21. Are archeological sites checked periodically to insure against threats from erosion, vandalism, grazing, tree root systems, rodent burrowing activity, cultivation or other impacts?	4 RM 5.9, 5 RM 16; PMD Priority III.A.3.b; Policy PMD III.B.3
V.A.22. Are Public Use Natural Area (PUNA) boundaries appropriately marked and recorded to insure integrity of the area? (refuges only)	8 RM 11.8; Policy PMD III.B.3
V.A.23. Are recreational uses of PUNAs compatible with established objectives? (Refuges only)	8 RM 11.8; Policy PMD III.B.3.f

QUESTIONS

- V.A.24. Is the existence of a PUNA made known to the general public and professional groups interested in research or education? (Refuges only)
- V.A.25. Are Research Natural Areas protected from any influence that could alter or disrupt the characteristic phenomena for which the area was established?
- V.A.26. Has a natural area management plan been prepared that is compatible with established station objectives?
- V.A.27. Has a wilderness management plan been prepared, if applicable?
- V.A.28. Does the plan include a detailed account of permitted activities and how they will be managed (including prescribed burning; wildlife inventories; wildlife facilities; animal damage control; grazing; and weed, insect, and disease control)?

REFERENCES

- 8 RM 1.8; PMD Priority III.A.1
- 8 RM 10; Policy PMD III.B.3
- 4 RM 5 Exhibits 1-4, 8 RM 10; Planning 1.1-1.33
- 4 RM 5 Exhibits 1-4, RM 8.11; Planning 1.1-1.33
- 6 RM 8.11; PMD Priority III.A.3.b

Part 1: Planning.....

What Should Our Objectives Be?

-and-

How Shall They Be Accomplished?

1.1. Planning and evaluating are processes we use every day as we make decisions: we analyze information, assess alternatives, and choose a strategy based on our perceptions of the current situation, also trying to anticipate future possibilities. The process is the same on a larger scale, only the number of variables and the complexity of the interactions may be greatly increased. The planning process is repeated continuously and at many different levels, to which the various management plans on Station shelves will attest. 1.1

1.2. Many plans exist in written form and could be arranged in a hierarchy, from national to regional to station master plans, down to individual programs plans, such as the hunt plan, or even a single lesson plan for a teacher workshop. Many field stations have long range plans (e.g. master plans) for the station and individual Program Areas (e.g. I & R Plans). Stations also do an annual work plan for Program Areas represented at the station. Some plans are unwritten, such as the one the Outdoor Recreation Planner quickly thinks through when a tour bus drops off 50 retired people at the Visitor Center and the visitors ask for a guided tour of the exhibits. The point is that planning is not static: it must be an ongoing process. Once plans are written, they must be reviewed periodically; needed changes in the plan may also be discovered once the program is in operation. 1.2

1.3. The ultimate reason for planning is to achieve programs that help accomplish U.S. Fish and Wildlife Service (FWS) goals on a local, regional, and national basis, and which are enjoyable and beneficial to the people affected by the programs. Specifically, periodic formal planning helps to ensure that the I & R Program is responsive to current needs of the field station, the Service, and the public and helps management make the best decisions to meet future demands; planning can also improve the efficiency, effectiveness, and impact of the Program. Further, section III.B.a. of the I & R Program Management Document (PMD) states that "Although I & R Program responsibilities are broken down into three major categories, I & R planning will reflect an integrated approach. That is, planning will consider resource responsibilities, other programs, and Service objectives, and will not occur in isolation."

1.3

1.4. A written plan analyzes and ties together the many variables and:

1.4

- provides a document for management to use to review existing and proposed programs
- documents the rationale for the proposals
- helps eliminate the costly mistakes caused by developing a program in "bits and pieces" without looking at the whole
- provides a guide for those developing facilities, media, parking lots, trails, etc.
- enables management to make informed decisions before programs or facilities are developed and to allocate the necessary resources
- considers the costs and impacts before it's too late to make changes

1.5. Part One describes the process of planning and the parts of the plan. Planning begins, ends, and begins again with collecting and assessing information and making decisions based on that analysis. Data collection and analysis for the initial I

1.5

I & R Program plan would center on the site as it exists, potential audience, and policies and concerns of the FWS. The process at an established station would include an evaluation of existing programs and audiences, a review of the original plan and inventories, and an analysis of current FWS concerns and priorities. Based on the information analyzed, goals and objectives for the I & R Program are determined which then determine content and methods chosen for programs in recreation, education, program information, and so on. The plan also establishes procedures for data collection and evaluation which begin the process once again. (Note: Refuges will soon have available the Refuge Master and Management Planning Guidelines, which will offer more detailed assistance and guidance in the planning process.)

Data Collection and Analysis

1.6. Data collection and analysis are frequently described as two steps but since, for the planner at least, the two are seldom done separately, they will be discussed jointly. Information is collected and analyzed on the factors that influence the program: the natural and cultural resources of the field station; the policies and priorities of the FWS from the national, regional, area, and station management levels; and the characteristics of actual and potential users. The goal is to come up with a plan that describes what, how, and why the I & R Program will be accomplished. Possible objectives, themes, alternate delivery strategies that conform to existing constraints should be considered as the planners study, analyze, and brainstorm. The plan should include a written documentation of the reasoning and data which resulted in the recommendations. Summaries and descriptions of significant findings should be written and organized in a meaningful way.

1.6

1.7. The tables on the next two pages suggest categories of information on the site that could be collected and possible sources and questions that will help the planners organize, analyze, and prioritize the collected information.

1.7

1.8 THE FIELD STATION: NATURAL PHENOMENA

Information

Information on the field station is collected on these major categories:

- Biological data
 - aquatic habitats
 - aquatic wildlife
 - terrestrial habitats
 - terrestrial wildlife
- Geological data
 - major landforms
 - representative geologic strata, those indicating origins
 - indications of prehistoric life
 - significant features such as springs, caves, faults
 - relation to regional geologic features
 - special relationships between geology and plant/animal life
 - relationship between the station site and the region, between the area and other geographical regions
 - descriptions of site
- Soils and topographical data
- Climate data
- Ground and surface water data
- Paleontological data (fossils, etc.)
- Existing educational/recreational Program
 - list of resource concepts currently utilized in educational or recreational activities
 - audiences reached
 - methods used
 - depth of coverage
 - sites used

Analysis

Analyze the collected information according to questions such as:

- What makes this site different from its surroundings?
- How is this site the same as surrounding areas?
- What resource characteristics will most interest locals? tourists?
- What aspects are unique (wildlife? habitat? certain species? cultural artifacts? ecological relationships?)
- Which sites are most representative of the station environment?
- Which sites have been used for recreation (outdoor classrooms, interpretation, etc.) and how has the site been affected? Are those sites most appropriate for the respective activities?
- Which sites should be protected?
- Which features indicate important relationships between man and environment?
- Where are animals usually seen?
- Which flora or fauna are unusual, important, exotic, endangered, potentially dangerous to people?
- What game species exist and where?
- Which sites show important ecological relationships (effects of exotics on native populations, effects of management practices, normal patterns of succession)?
- Where do outstanding specimens exist (e.g., very large, very old, unusual coloring, shape)?
- Which sites have been used for outdoor classrooms, interpretation, recreation? What is the carrying capacity of these sites?
- Which sites have most potential for outdoor classrooms? interpretation? recreation?
- Which resource components or concepts should be addressed in outdoor classrooms? interpretation? recreation?
- Where is research lacking? What further study is needed?

Sources: Inventories in initial or subsequent planning documents for the station; management plans and reports (monthly, annual); field study and analysis; base maps; Environmental Impact Statement; brainstorming by the planners.

1.9 THE FIELD STATION: CULTURAL PHENOMENA

Information

Information on cultural resources is collected for these major categories:

- Features indicating existence of previous generations (primitives, Indians, pioneers, etc.) and where, when, how, why they lived at a particular site
- Features or sites of which there are historical photographs or descriptions
- Contemporary features indicating past uses of a station (for farming, mining, lumbering, etc.)
- Overview of the history and archeology of the station and region
- Concepts currently addressed; audience reached; media available

Analysis

Analyze the collected information according to questions such as:

- Why was the field station established?
- How has the area traditionally been used?
- What concepts will most interest locals? tourists?
- Which sites, artifacts should be protected?
- What activities may affect known and unknown cultural resources?
- Which sites need further survey work? (Which have on-the-ground reconnaissance surveys with negative findings - which sites have not been investigated?)
- Which ideas, sites have most potential for outdoor classrooms? interpretation? recreation? Which have been used previously? Is present treatment adequate?

Sources: Magazines, newspapers, journals, books, interviews with knowledgeable people, surveys and cultural resource inventories; brainstorming by the planners.

1.10 MANAGEMENT PRIORITIES, POLICIES, PROBLEMS

Information

Information on the management of the station is collected:

- Policies, objectives, priorities, plans affecting public use, interpretation and recreation from national, regional, area, station administration
- Applicable state or county laws related to public use of the field station
- Applicable state outdoor recreation plans, coop agreements
- Current situation at the field station - funding, staffing levels, facilities, media
- Other educational/recreational programs in the area

Analysis

Analyze the collected information according to questions such as:

- What service-wide resource management problems or priorities are represented at this station?
- What public use activities have potential to impact adversely on the station and what alternatives are there for addressing the problem?
- What area or station resource management concerns or problems are most critical (rank priority)? Do any of these relate to any potential or actual audiences? How can conflicts be resolved?
- Will I&R duplicate programs in the area? Is duplication justified?

Sources: Interpretation and Recreation Program Management Document, Hatchery Development Plan, Refuge Manual, Master Plan, Environmental Impact Statement, Environmental Assessments; Sign Plan or other station management plans, Service Management Plan, Cultural Resource Management Guidelines, station maps.

What Do You Need to Know about the Audience?

1.11. As noted repeatedly in Part Three, the program must be developed to relate to the characteristics of the audience. If you knew every visitor's background and preferences, you would have the information needed to plan programs that each person would relate to and be intrigued by. But, no station has the staff or the means to acquire this kind of data base. We instead compromise by trying to find a number of "common denominators" which group some general or even specialized interests based on certain demographic information or recreational pursuits, such as retirees, family groups, bird watchers, hunters, fishermen, photographers, and so on. There is no "average" visitor and the more specific subgroups you can identify, the better the program can become. If, for example, you know that a portion of the audience consists of family groups from within 25 miles who visit four times a year (usually spring and fall) and enjoy nature-related activities, then recreational and educational opportunities could be planned with this group in mind, e.g. Self-guided "Spring Wildflower" or "Fall Changes" Walks using a brochure written for a parent to use to lead the family in their enjoyment of the trail. Comparisons could be drawn from family life, local history, current events, local climate, and so on.

1.11

1.12. The following (1.13 - 1.22) is a list (certainly not exhaustive) of categories of audience characteristics, with references to possible data collection methods found in Part Two. (Part Three gives many illustrations of applying this information to various program areas.) Data should be systematically collected to determine audience characteristics. If this information has not been collected regularly and recorded, have knowledgeable staff estimate user makeup and arrive at a consensus. Then establish a system of collecting information for the next year.

1.12

EXISTING AND POTENTIAL AUDIENCES

Information

Information on the audience is collected; suggested data collection methods are enclosed in brackets:

- 1.13 Age distribution [method see paragraph 2.19.d,e,m,p]
 - % children (under 12)
 - % teens (13-17)
 - % adults (18-61)
 - % older adults (62+)
- 1.14 Group size and makeup [method see paragraph 2.19.d,e,m,n]
 - alone?
 - with a family?
 - with an extended family?
 - with several families?
 - with a tour group or club?.
 - with a school class?
- 1.15 Proportion of locals to tourists [method see paragraph 2.19.a,e,m]
 - what % are locals?
 - what % are from the region?
 - what % are nationals?
 - what % are foreign?
- 1.16 Education levels [method see paragraph 2.19.m]
 - pre-school?
 - elementary?
 - secondary?
 - college?
 - graduate school?
- 1.17 Use periods [method see paragraph 2.19.a,b,c,d,e,h]
 - monthly totals
 - yearly totals
 - maximum and minimum use periods (by week and month)
 - seasonal distribution
- 1.18 Length of stay [method see paragraph 2.19.e,f,h,n]
 - % 1 hour?
 - % half day?
 - % day?
- 1.19 Frequency of visits [method see paragraph 2.19.e,f,m]

Analysis

Analyze the collected information according to questions such as:

- What "common denominators" can be identified?
- What patterns can be observed:
 - What activities does each group pursue and why
 - How long do they spend at each activity?
 - In what season do they visit?
 - What messages (theme, content, style) would be most effective with each group?
- What are the characteristics of each group which most affect the choice of communication techniques?
- What conditions will enhance or detract from the recreational experience of each group?
- What projections can be made for visitation? What potential audiences exist?
- How can the public be involved in the decisions affecting public use of the field site?
- What are the wants and needs of area residents relative to public use at the station?
- What are the needs of special populations?
- Which data collection or evaluation techniques should be developed to establish an audience data base?

Existing and Potential Audiences (continued)

Information	[data collection method]
1.20 Special Populations [method see paragraph 2.19.m,n,p] - % physically/mentally disabled - % non English speaking - % senior citizens - % children	
1.21 Activities pursued [method see paragraph 2.19.a,e,f,h,j,l,m,n] a. FWS designation (by category and activity) - % wildlife oriented recreation - % non wildlife oriented recreation - % interpretation - % outdoor classroom b. Recreation motivation [see paragraph 3.54-3.60 for discussion] [2.19.m,n,p]	
1.22 Evaluation of various activities (themes/media/programs visitors find most/least interesting) [method see paragraph 2.19.e,g,h,i,m,n,o,q,v]	

The Plan

1.23. Based on the evidence compiled and the creativity of the planners, The Plan emerges, including:

1.23

- goals and objectives
- theme and subthemes
- program components
- research requirements
- implementation components (when, how, by whom, cost, priorities)
- references, appendices

Goals and Objectives

1.24. Considering overall station goals; management problems; area, regional, and national resource problems, and Service goals for I & R, what is (are) the goal(s) for the public use program for your station? When this has been determined, the next step is to decide how that goal can be met through rec-

1.24

reation, interpretation, outdoor classrooms, program information, and dedicated areas. Objectives (concise statements of what is to be accomplished) are then written for each of the Program Areas on the field station and for activities in each Program Area. The objectives should be stated in terms of outcomes that can be evaluated using available data collection/evaluation techniques. For example, an objective for Program Information could be "To provide information on the station, the Fish and Wildlife Service, and wildlife." An activity level objective for that Program Area could be: "After viewing exhibits in the visitor center, visitors should be able to state correctly the name of the agency administering the field station."

1.25. Writing measurable objectives is not an impossible task. Many articles and books have been published on how to write behavioral objectives. A behavioral objective should contain these four Components:

- Who is to exhibit the behavior or performance?
- What observable action or performance is the participant expected to exhibit?
- What are the conditions (materials, instructions, directions or restrictions) under which the behavior is exhibited?
- What constitutes an acceptable response?

Behavioral objectives are written with action verbs: name, label, select, match, rank, tell why, explain, create, compose, differentiate, demonstrate, define, state a rule, apply a rule, and so on. The experience created by an activity should result in some kind of behavior that could be observed and measured. For example, an objective for an interpretive activity could be: "After traveling the Bluelake Wildlife Observation Trail and reading the accompanying interpretive brochure, the participant will be able to identify two environmental factors affecting the

1.25

wood duck's survival (if asked to do so by a staff member). For more information on writing measurable objectives see: Magar, R.F. 1975. Preparing Instructional Objectives (2nd ed). Belmont, CA: Pitman Learning, Inc. and Putney, A.D. and Wagar, J.A. 1973. "Objectives and Evaluation In Interpretive Planning," Journal of Environmental Education, Vol. 5 (1): 43-45.

Theme and Subthemes

1.26. Pick a public-use theme which unifies the purpose and characteristics of the station. The theme should be an "umbrella" capable of encompassing natural and cultural subthemes, amenable to various media and audiences, and suggestive of a visual symbol or logo and design concept for the station's public use program. For example, the theme of Chincoteague NWR is "Where People and Wildlife Meet." This theme could encompass subthemes such as how habitat affects wildlife and people; birds and birdwatchers, cultural influences on wildlife, etc. 1.26

Program Components

1.27. Decisions must eventually be made on what I & R Program areas will be emphasized and then, how objectives can be accomplished for each program area with existing fiscal and managerial restrictions, actual and potential audiences, and the physical and cultural resources of the site. 1.27

1.28. The first decision centers on the analysis of FWS and station priorities, the potential the site offers for recreation, interpretation, outdoor classrooms, and so on, and whether objectives could best be accomplished through recreation, interpretation, outdoor classrooms, program information, dedicated areas, and so on. Once it has been decided where the station will place greatest program emphasis, what dollars will be allotted and how much staff time if available, the next level of decisions can be made, namely: 1.28

- What activities or opportunities will be made available and when?
 - What sites, facilities will be used?
 - What media will be used for each audience grouping?
 - What messages and concepts will be stressed to each subgroup?
 - How will management concerns be incorporated?
-
- What special problems exist (safety, fragile environments, and so on)?

All of these and other decisions should be made within the context of what will be enjoyable to the visitor. Various authors have suggested using a matrix to match audience subgroups to management concerns, most effective methods of contact and communication, activities preferred, messages to be communicated, and so on. Part Three of this Handbook goes into greater detail on planning programs that will be effective with various audiences.

Research Requirements

1.29. The analysis of data on the site and audience should reveal areas where the research base is lacking, where corrective measures are warranted, and needed data collection/evaluation procedures. For example:

1.29

- Are inventories of cultural and natural resources complete?
- What potential Dedicated Areas need further study?
- Which sites require monitoring for evidence of adverse impacts?
- What means of program/staff evaluation should be adopted?
- What means of data collection on station visitors should be implemented?
- Are any public use media outdated, inaccurate?

And so on . . . Part of the plan must include a detailed description of data collection and evaluation, and how and when those procedures should be followed.

Implementation: The Script

1.30. This step or part of the plan includes the description of how to put the plan into effect, including: 1.30

- Schedules and priorities in development (how development will proceed, what gets done first)
- Who is responsible for what jobs
- Anticipated costs in terms of staff and budget
- and . . . when should the plan again be reviewed, added to, changed.

References and Appendices

1.31. This section should include relevant inventories, reports, plans, etc. which provide supportive or supplementary information useful to those evaluating or following the plan. 1.31

Review/Revisions/Approval

1.32. The final draft of the plan should be reviewed by knowledgeable persons before it is submitted to the regional office for approval. Reviewers should consider whether: 1.32

- the plan is compatible with other relevant FWS plans
- the proposed program can be objectively evaluated
- the proposed program is realistic
- the proposals are in line with current FWS policies and priorities
- the Program will meet the needs of visitors and staff.

The planners should analyze comments by the reviewers and revise accordingly. The revised plan must be approved by administrators from the station and regional office before it may be implemented.

1.33. Resources.

1.33

Blahna, D. J. and Roggenbuck, J. W. 1979. "Planning Interpretation which is 'In Tune' with Visitor Expectations," Journal of Interpretation, IV (2).

Bodaracco, R. J. and Scull, J. 1978. "Megascale Interpretive Planning," Interpreter, Fall: 4-10.

Bradley, G. A. 1976. "The Interpretive Plan," in Sharpe, G. (ed.) Interpreting the Environment. New York: John Wiley & Sons, Inc.

Brown, W. E. 1971. Islands of Hope. Arlington, Virginia, National Recreation and Park Association.

Driver, B. L. (ed.) 1970. Elements of Outdoor Recreation Planning. University of Michigan.

Paskowsky, M. 1982. Interpretive Planning Handbook. Harpers Ferry, WV: National Park Service.

Robinson, A. H. 1975. "Marine Parks: Planning for Recreation, Interpretation, and Environmental Education," Trends, July/Sept.: 9-22.

Sharpe, G. W. and Gensler, G. L. 1978. "Interpretation as a Management Tool," Journal of Interpretation, III (2):3-9.

Traweck, D.E. and Veverka, J.A. 1979. "A Systems Approach to Interpretive Planning," Journal of Interpretation, June, IV.

Part 2: Evaluation/Data Collection

Are We Meeting Our Objectives?

Why Evaluate I & R Programs?

2.1

2.1. Evaluation and data collection can be formal or informal and involve many different methods. It occurs throughout the planning process as information is collected and analyzed and decisions made based on a critical assessment of the variables; it also occurs during and after the implementation of plans. Assessment or evaluation of the situation after a program is in operation begins the planning process once again. Evaluation is done so that planning can be more effective and then results are evaluated to determine the effectiveness of the plan. Specifically, we evaluate:

- To determine the extent to which objectives are being met
- To determine the adequacy of objectives or messages
- To determine what works and what doesn't and where improvement is needed
- To determine accountability and responsibility to the public and the FWS
- To determine how well the staff perform their jobs
- To determine adequacy of space, facilities, etc.; to insure safety; to maintain attractive sites and structures; to monitor impact on the resources of the field station

EVALUATE TO DETERMINE THE EXTENT TO
WHICH OBJECTIVES ARE BEING MET

←rationale→

2.2. We are all familiar with stories about public schools which purport to be teaching students how to read, but graduate many who can't --and about recreational programs that are supposed to be changing delinquent behavior, but don't. Unless you can prove that something happened as a result of your program, it probably didn't. The proof lies in valid evaluation. Is the message an activity is supposed to be communicating the same as the message which is actually being communicated? Without proof, no judgments can be made about the benefits or cost-effectiveness of the program.

2.2

2.3. Objectives can't be measured unless stated in terms of results that can be measured. You can't measure an objective of "To increase appreciation of . . ." or to "increase understanding of _____" unless you know what a person's appreciation level or understanding level was prior to the experience. It's highly unlikely that either appreciation or understanding would or could be determined.

2.3

EVALUATE TO DETERMINE ADEQUACY
OF OBJECTIVES OR MESSAGES

←rationale→

2.4. Evaluation can reveal information about the station resource or the audience which would indicate that the assumptions behind the objectives were incomplete. Or, that program components, while meeting their respective objectives, are not fulfilling the overall program goal or objective. Therefore, objectives may need to be redefined or an area of emphasis changed. Legislation or changes in FWS priorities or policies may also change and objectives and plans would then require modification.

2.4

EVALUATE TO DETERMINE EFFECTIVENESS
OF PROGRAM COMPONENTS

←rationale→

2.5 Staff need to know what techniques of management, education, interpretation, etc. are producing the desired results and why. A method that works well can be repeated if the steps to achieving the objective are documented and the variables identified. (Don't assume the person responsible for a program area will be doing the same job next year.) Staff must also know what activities are ineffective so that the activity

2.5

can be eliminated or changes made to improve it. Is the problem a result of poor delivery? inappropriate content? too many or too few participants? poor scheduling? You need to know whether minor or major adjustments are required.

ACCOUNTABILITY TO OTHER PROGRAMS IN FWS AND TO THE PUBLIC

←rationale→

2.6. I & R staff must be able to show station management that the dollars spent on the Program are justified. Can you prove:

2.6

- that the Program is achieving the results or benefits claimed?
- that the Program is necessary and not just an extraneous service for visitors with no impact on fish/wildlife/habitat management?
- that the public is receiving a good return on their tax dollar?

Accountability is especially critical in times of inflation and cut backs in federal spending. You need proof that interpretation is helping cut down on vandalism, decreasing visitor impact on habitats, providing enjoyable experiences or whatever the objectives are.

EVALUATE TO DETERMINE STAFF EFFECTIVENESS

←rationale→

2.7. Evaluation can help individuals grow by identifying what they do best and what skills need improvements. It may be that a person's special talents in one area may be better utilized in another FWS or station position--or job responsibilities may be shifted to take advantage of specialized abilities. Evaluation can be a self-help tool or a means to identify areas where inservice education would be most beneficial. I & R staff can be evaluated on organizational abilities, written and oral communication skills, promptness and dependability, ability to relate to people, and so on.

2.7

EVALUATE TO DETERMINE ADEQUACY OF FACILITIES, SAFETY

←rationale→

2.8 These factors fall within the category of continuous monitoring. For example, safety conditions must be determined before an accident occurs so evaluation cannot wait for an annual or monthly check; managers need to know ASAP when, how, and why public use is affecting the site.

2.8

When to Evaluate

2.9. When does evaluation occur? As soon as possible. The earlier problems are identified, the sooner they can be corrected. Staff should continuously assess and record impacts on the station resource and the quality of the visitor experience. For example:

2.9

- Staff should be constantly aware of and responsive to visitors' verbal and nonverbal assessments of I & R Program activities. When you hear about the typo on a label in the reptile exhibit, correct it ASAP.
- Frequent complaints about lack of adequate directions to the field station should be dealt with immediately
- Changes in wildlife activity or habitats, especially those caused or influenced by the presence of people, should be constantly monitored.

2.10. Evaluation takes place in the planning stages:

2.10

- I & R planning involves extensive assessment of data on the resource, audience and FWS policies.
- Before money is invested in expensive audiovisual productions or exhibits it's essential to have scripts and designs assessed by qualified persons.
- Labels, signs, exhibit text, brochures should be carefully checked for errors in type, grammar, content.
- Principles of learning and interpretation (Part Three) should be applied to content and design of interpretive/educational media.
- Slides/tape programs should be trial tested before widespread use.

2.11. Routine daily, weekly, or monthly evaluation is necessary for checking equipment, trails, sites, and other facilities that may change over a short time period, especially during heavy visitor use periods. For example,

2.11

- Exhibits and displays should be in good working conditions and be visually attractive.
- Bulletin boards must display current information
- Brochures must be available when needed
- Trail signs must be in place and in good condition
- Guard rails must be in place . . . and so on.

2.12. Periodic, seasonal or annual evaluations are needed for total program efforts (including content, techniques, staff, equipment, etc.). See Refuge Manual Chapter 6 Reporting and Recordkeeping and 7 Annual Reports Narrative.

2.12

Suggested Methods

2.13. For the most part in the FWS, more data is collected and analyzed on the visit rather than the visitor; number of visits and activity-hours are reported but few if any surveys are conducted of visitor evaluations of their experiences, behavior, attitudes, why they chose certain activities, and what they expected. Until more formal sampling and survey techniques are approved by OMB for use, some informal methods of data collection and evaluation are suggested. (See also RM.17 Permits and Agreements, especially section 17.4.)

2.13

2.14. Meticulous Record Keeping and Informal Data Collection
Documenting procedures and recording activities are essential for Program continuity but absolutely critical to prove changes or comprehensiveness of programs. It would be impossible to show that interpretive activities reduced vandalism by 50 percent in the last two years if incidents of vandalism are not reported and recorded (as well as rectified). Staff need to identify what information they need to collect, when to collect it, and how to organize it in a way conducive to analysis and quick reference. For example, below are some areas of activities common to I & R

2.14

Programs and information that would be helpful to record; observation and assessment by the staff are the evaluation techniques involved.

2.15. Content/Programs:

2.15

- Keep a grid or matrix, along with a file, on natural/cultural resource concepts addressed or utilized by each interpretive, educational, recreational, or informational activity or medium and the audience(s) these were directed to. This will quickly reveal whether the content stressed is pertinent to FWS directives, where there is duplication, and what concepts are omitted. An additional cross-reference could show which specific management concerns are incorporated along with the above content.
- Record visitors' questions and requests for information on topics relevant to the station, especially for topics which are not covered in exhibits, brochures, books, etc.
- Keep files of activity/lesson plans or outlines for every staff-led presentation. Should include an outline of the content and the delivery techniques used; amount of time involved; also helpful to keep self-evaluations by the leader and critiques of most/least effective techniques.
- Record schedules of educational or recreational programs and activities along with a description or outline of the event.

2.16. Media:

2.16

- Keep lists of what study guides, lesson plans etc. are available for outdoor classrooms or interpretation. Also keep track of who used these, when, for what audience. If some materials are not being used, find out why.
- Keep records on methods used to publicize the I & R Program, including what was done, lead time, mailing

lists, number of flyers, etc. printed, estimation of effectiveness of promotion.

- Keep records on number of brochures or other materials printed number stocked at various locations, and when this occurred.
- Keep a bibliography or card catalog of articles, books, and other resources available for staff to use in preparing educational/ recreational activities:

2.17. Audience:

2.17

- Record numbers, activity pursued, and as much information as possible to collect: age, home, number in party, length of stay, interests (Methods other than observation are listed in 2.19.)
- Record details of accidents: when, what, whom, circumstances, FWS response
- Record vandalism and theft: estimate date, time, description of what was done, severity, circumstances
- Record instances of crowd control problems: traffic, parking, congestion, unusual amounts of litter, people confrontations (see paragraph 3.63)
- Record visitor complaints and the circumstances related to the complaint
- Special scheduled sessions, especially EE workshops and school sessions, allow the opportunity to find out more about audience--both before and during the event: educational backgrounds, social backgrounds, special physical needs/restrictions
- Record number of phone calls from the public for various purposes: e.g. directions to field station; questions about schedules; questions about fish and/or wildlife, and so on
- Find out beforehand and record actual characteristics of groups scheduling an outdoor classroom session e.g.

grade, ages, special problems, type of group, origin, activities planned or pursued, length of visit, whether the group has visited before. Preliminary information is necessary for recommending appropriate outdoor classroom activities.

2.18. Staff:

2.18

- Record amount of staff time involved in various responsibilities: media preparation, teacher workshops, responding to inquiries, law enforcement activities, etc.
- Record details of assistance offered various groups, organizations in area (what was done, how effective was the involvement, follow-up required)
- Record informal assessments of staff by visitors

2.19. Once staff have decided what records are essential to planning or evaluating their program, it's absolutely essential that the information be consistently and constantly recorded.

2.19

Comparisons of effectiveness or trends can not be determined on the basis of incomplete information. Likewise any of the other methods of data collection and evaluation listed below must be used consistently and following a planned schedule. Unless systematically collected, the sporadic collection results in a sampling of data, which is not statistically sound and is therefore not representative of total public use. The charts on the next page list some methods of data collection and evaluation appropriate for use on field stations and comparisons of limitations in the technique and the type of information acquired. Sources of additional information are also included.

2.19 AUDIENCE DATA

METHOD	INFORMATION REVEALED	RESTRICTIONS	REFERENCE
<u>a. Routine Observation</u> Staff routinely patrol sites or parking lots and count vehicles or people; can also record license plates	Numbers at sites at particular time	Must be done systematically, doesn't tell purpose of visit or other information on demo or psychographics	
<u>b. Day-Long Observation at Entrance</u> (12 hour period)	Staff person counts number of vehicles and number per vehicle; intended to represent season average of occupants per vehicle; can be used in conjunction with traffic counts to give total	Doesn't tell purpose of visit	
<u>c. Mechanical Traffic Counters</u>	Number of vehicles entering or exiting station	Mechanical failures and vandalism are potential problems; data must be taken from the counter on systematic basis. Multiple access points make total counts difficult	
<u>d. Hand Counters</u>	Number of visitors at a staffed facility; could give approximate figures on age distribution and grouping	Doesn't tell purpose of visit	
<u>e. Registration Records</u> Guest book at visitor center, special use registration (eg wilderness area users, outdoor classroom groups)	Number, origin, visitor comments; group size; can identify range of reactions	Respondent self selected (not all visitors will "sign in"); must establish a ratio of signers to nonsigners, which will vary according to season, crowding	
<u>f. Hunter Records</u>	Information on hunting participation taken in conjunction with bag counts during hunting season		
<u>g. Observing, Listening or Viewing Time</u> Observe time visitors view or listen to interpretive media and compare with amount of time required to completely read or hear it	Behavioral measure of preference and measure of visitor orientation and movement	Observer presence may cause visitor to behave differently; requires trained observer; results may be misleading unless combined with cross check to determine whether length of time is a function of interest, ability level or the quality of writing	Shiner and Shaffer. 1975. "How Long-Do People Look at and Listen to Forest Oriented Exhibits?" USDA Forest Service Research Paper NE-325. 16p.

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METHOD	INFORMATION REVEALED	RESTRICTIONS	REFERENCE
<h3><u>h. Time-Lapse Photography</u></h3> <p>Time-lapse movies taken of visitors to identify use patterns without directly observing visitors</p>	<p>Quickly identifies use patterns without the restriction caused by direct observation; permanent record useful for training/evaluating staff; records continuously without burden on staff; makes information readily accessible in short time span</p>	<p>Cost of equipment; area covered by camera usually quite limited</p>	<p>Wagar, J. A. et al. 1976. "Evaluation Techniques for Interpretation: Study Results from an Exhibition on Energy." USDA Forest Research Paper PNW-211 p.3&8.</p>
<h3><u>i. Observing Audience Attention</u></h3> <p>Observer scans audience at regular intervals to determine % paying attention; records eye contact, facial expression and/or direction person faces</p>	<p>Provides information on audience behavior during presentations; can correlate audience response to content or technique of its delivery; measures attention but not necessarily effectiveness</p>	<p>Attention doesn't necessarily reveal enjoyment, knowledge received, effectiveness, etc. Difficult to determine % for large groups</p>	<p>Dick, R.E., Myklestad, E., Wagar, J.A. 1975. "Audience Attention as a Basis for Evaluating Interpretive Presentations." USDA Forest Service Research Paper PNW-198, 7p.</p>
<h3><u>j. Observation of Behavior Traces</u></h3> <p>Effects of visitors on trails, floors, exhibit cases (e.g. litter, broken branches, soil compaction, fingerprint on exhibit cases, etc.)</p>	<p>Can reveal whether interpretive messages are effective in changing behavior</p>	<p>Difficult to determine which technique produced the desired result</p>	
<h3><u>k. Self Test Devices</u></h3> <p>e.g. quizboard records responses to questions</p>	<p>Can measure audience responses</p>	<p>May require OMB approval; may not measure learning because participants select questions to which to respond; problems with vandalism and mechanical failure</p>	<p>Wagar, J.A. 1972 "The Recording Quizboard; A Device for Evaluating Interpretive Services." USDA Forest Service Research Paper PNW-139, 12p.</p>
<h3><u>l. Following Sample Visitors</u></h3> <p>Randomly selected visitors are followed unobtusively to record time at each stop and total time in building</p>	<p>Visitor orientation and movements</p>	<p>Staff time; will not give rating of visitor interest</p>	<p>Kuehner, R.A. & Elsner, G.H. <u>Response of Visitors to the Rainbow Trail</u>. Forest Ser. Research Paper PSW-131. 17 p.</p>
<h3><u>m. Questionnaires</u></h3> <p>Set of written questions administered to a sample of visitors to determine enjoyment, knowledge, attitudes, behavior or demographics</p>	<p>Can assess knowledge, opinion, attitude, behavior, provide information on demographics</p>	<p>OMB approval required; developing valid questions difficult; sampling must be statistically sound; time consuming and costly</p>	<p>Many sources</p>
<h3><u>n. Informal Conversations</u></h3> <p>Staff member asks questions of visitors under normal working conditions - ask same question</p>	<p>Visitor reaction to programs and facilities; visitor motivations; demographics</p>	<p>Data not statistically sound</p>	<p>Mailler, G.H. et al. 1980. "The Informal Interview as a Tech-</p>

METHOD	INFORMATION REVEALED	RESTRICTIONS	REFERENCE
<p>n. continued</p> <p>of as many visitors as possible and record answers and conditions accurately</p>			<p>nique for Recreation Research," <u>Journal of Leisure Research</u> 12(2):174-182.</p>
<p><u>o. Suggestion Box</u></p> <p>Sign asking that suggestions or comments on program be placed in locked box</p>	<p>Because anonymity is assured, this method may yield better information than the visitor registration method; range of opinions: very good to very bad; if location is not changed can also reveal trends</p>	<p>Does not give unbiased opinions of average opinion and may represent irritated or highly motivated visitors</p>	<p>Wagar, et al 1976 p6.</p>
<p><u>p. Review of Existing Data</u></p> <p>Review results of surveys done on other area or regional sites</p>	<p>Demographics, visitor profiles</p>	<p>Applicability to station visitors; validity of research</p>	<p>Journals of the Travel Research Association (TTRA), Forest Service Reports, US Army Corps Reports, etc.</p>
<p><u>q. Record Visitor's Questions</u></p> <p>Write down questions asked and the situation involved</p>	<p>Can reveal instances of confusing information in media, possible subjects for interpretation</p>		

2.19 PROGRAM DATA

METHOD	INFORMATION REVEALED	RESTRICTIONS	REFERENCE
<u>r. Education and Recreation Standards</u>	Adherence to FWS policy, whether components associated with quality educational or recreational programs are present in program being evaluated	Deals with inputs, not visitor experience; yes-no answers do not reveal percentage answers	
<u>s. Expert Judgment</u>	May offer new insights and innovative approaches to situation; can identify major problems before investments are made in time and money	Expert's biases and prejudices; lack of valid reliable methodology	
<u>t. Comparing Goals and Objectives to Current Situation</u> eq. Goal Attainment Scaling; Discrepancy Evaluation Model (DEM)	Degree to which overall objectives are being met	DEM is intricate and requires training to conduct	Franklin, J.L. & Trasher, J.H. 1976. <u>An Intro to Program Evaluation</u> . John Waley, NY. Yavorsky, D.A. 1976. <u>Discrepancy Evaluation: A Practitioner's Guide</u> , Evaluation Research Center, University of Virginia Charlottesville VA.
<u>u. Checklists - of criteria to accompany program objectives</u>	Depends on checklists	Quality of information depends on the items in the list; subjective bias by evaluator	See checklist in Wagar 1976 op cit p. 6
<u>v. Visitor Voting</u> Visitors rate exhibits, etc. by voting from 1 (poor) to 5 (good) for each presentation	Identifies general changes in quality of presentation	Burden on visitor; only those motivated will vote; staff time required to tally votes	Wagar, 1976 op cit p. 3&8

2.19 STAFF DATA

METHOD	INFORMATION REVEALED	RESTRICTIONS	REFERENCE
<u>w. Peer Evaluation</u> By staff with similar positions	Job performance as viewed by in-house personnel	personal biases and prejudices; may not reveal how well a person relates to visitors	
<u>x. Checklists</u> - of traits, skills used as self-evaluation or by someone else	Interpretive skills management skills etc. - depends on checklist	subjective bias	
<u>y. Expert Audit</u> - by someone trained in skills being evaluated (someone from the FWS regional office for example)	Job performance - probably more effective than peer evaluation		

2.20. Resources.

2.20

Brown, W.E. 1971. Islands of Hope, NRPA, Arlington, VA.

Carle, J. 1980. "Evaluation of the Interpretive Experience," The Interpreter, No. 4:9-10.

Colwell, T.B. "A Critique of Behavioral Objectives Methodology in Environmental Education," Journal of Environmental Education, Vol. 7, No. 3:66-71.

Dick, R.E., Myklestad, E., and Wager, J.A. 1975. "Audience Attention as a Basis for Evaluating Interpretive Presentations," USDA Forest Service Research Paper PNW-198, Portland, Oregon.

Edginton, et al. "Evaluation," in Recreation and Leisure Programming, Saunders College, Philadelphia.

Hammitt, W.E. 1978. "A Visual Preference Approach to Measuring Interpretive Effectiveness," Journal of Interpretation, Vol. 3, No. 2:33-37.

Putney, A.D. and Wagar, J.A. 1973. "Objectives and Evaluation in Interpretive Planning," Journal of Environmental Education, Vol. 5, No. 1:43-45.

Roggenbuck, J.W. 1979. "The Field Experiment: A Suggested Method of Interpretive Evaluation," Journal of Interpretation, Vol. 4, No. 1:9-11.

Webb, E.J., Campell, D.T., Swartz, R.D., and Sechrest, L. 1966. Unobtrusive Measures: Nonreactive Research in the Social Sciences, Rand McNally, Chicago.

Wagar, J.A. 1978. "Why Interpretation? Meeting the Challenge," Journal of Interpretation, Vol. 3, No. 1:6-10.

Wagar, J. A., Lovelady, G.W., Falkin, H. 1976. "Evaluation Techniques for Interpretation: Study Results from an Exhibition on Energy," USDA Forest Service Research Paper PNW-211.

Washburne, R.F. and Wagar, J.A. 1972. "Evaluating Visitor Response To Exhibit Content," Curator, Vol. 15, No. 13: 248-254.

Part 3: Program Development.....

Developing and Implementing Programs for People

3.1. The real test of any public-use program is what happens to people. The service goal of U.S. Fish and Wildlife Service (FWS) educational and recreational programs is to "inform and educate the public in environmental issues affecting fish and wildlife resources and provide compatible recreation on service lands." The Service must provide continued--and recognizable--benefits to people without damaging the resource. The Interpretation and Recreation Program must teach people how to enjoy the resource, how to use the station resources without abusing them, and help people make informed, objective decisions about their lands and resources in the future. In order to accomplish this goal, any activity, all media, every site or facility designed for the public must be developed to relate to the audience in the most effective way possible. The planner must synthesize FWS policies, station objectives, resource characteristics, and incorporate these into programs that people will relate to and enjoy, whether that program is classified as recreation, interpretation, outdoor classrooms, or whatever. All of the above leads to the rationale behind Part Three: theories about how we learn, what we enjoy, and techniques that facilitate the educational/recreational experience.

3.1

LEARNING BUILDS ON WHAT IS ALREADY KNOWN

←rationale→

3.2

3.2. Our responses to situations depend on past experiences and present needs (physical, emotional, social, and so on). We interpret new stimuli according to information already stored in the brain; therefore, perception is a function unique to each individual. All experiences are either:

- organized into some relationship to the person
- ignored because the experience is perceived as being irrelevant to that person
- given distorted meaning because the new information seems inconsistent with the person's self image
- denied organization (if perceived as threatening to the person's self image).

The implication for those planning or presenting programs is that backgrounds, needs, ability levels, and interests must be known--then new concepts can be related to known concepts, or new experiences and challenges can be planned to capture attention. A principle of interpretation parallels this concept: interpretation must relate the unknown (the subject being presented) to something in the experience or personality of the visitor. The concept also applies to recreation, in that what is recreational for an individual depends on one's perception and personal needs.

3.3

3.3. Resources.

Boulanger, F.D., and Smith, J.P. 1973. "Educational Principles and Techniques for Interpreters," USDA Forest Service General Technical Report PNW-9, Washington, D.C.

Csikszentmihalyi, Mihaly. 1975. Beyond Boredom and Anxiety, Jossey-Bass, San Francisco.

Hergenhahan, B.R. 1976. An Introduction to Theories of Learning, Prentice Hall, Englewood Cliffs, New Jersey.

Field, D.R. and Wagar, J.A. 1976. "People and Interpretation," in Sharpe, G.W., Interpreting the Environment, John Wiley and Sons, New York.

Hart, L. A. 1975. How the Brain Works, Basic Books, Inc., New York.

Sharpe, G.W. 1976. "An Overview of Interpretation," in Sharpe, G.W., Interpreting the Environment, John Wiley and Sons, New York.

Implications for Outdoor Classrooms

3.4. Use language (written or spoken) the audience will understand. For most outdoor classroom sessions the staff should know beforehand the age levels of the group participating and learning materials or presentation materials can be selected accordingly. Ask the leader or teacher the number of students planning to attend; their ages; what relevant topics they've studied; and any special problems or concerns of the group. Don't use scientific terminology or jargon without simplifying the words and concepts.

3.4

3.5. Special populations in outdoor classrooms, since they are accompanied by qualified teachers/leaders, should not pose any particular problem to FWS staff. The students' teacher can adapt existing lesson plans, activities, study sessions and so on to the special needs of their students.

3.5

3.6. Resources.

3.6

Hunt, J.D. and Brown, P.J. 1971. "Who Can Read Our Writing?" Journal of Environmental Education, Vol. 2, No. 4: 27-29.

Machlis, G. and McDonough, M. 1978. "Children's Interpretation: A Discovery Book for Interpreters," Cooperative Park Studies Unit, College of Forest Resources, University of Washington, Seattle, Washington.

3.7. Use examples and comparisons from the background and experience of the audience. Since the outdoor classroom audience comes from the area, many comparisons can be drawn from characteristics of the local environment. The planner can introduce new concepts in presentations, lesson plans, or suggested activities by comparing to something the audience knows; for example:

3.7

- Relate to the weather, climate, geography of the area
- Relate to the history of the area: the early settlers, political events, discoveries, etc. Environmental education (EE) has always stressed that the historical per-

spective of current or potential environmental situations should be taken into account to show the interrelationships among economics, politics, religion, culture, and environmental problems.

- Relate to recreational pursuits of residents (e.g. compare hunting characteristics of an animal to techniques used by (human) hunters).
- Relate to common subjects or personalities in the media. Television and other media have had significant impact on creating a common denominator in this country and have minimized many regional differences.
- Relate to common needs of every person: physiological, safety, social, personal recognition.

Keep in mind also that the ability to understand concepts depends on both past experience and physical maturation. The chart on the next page indicates some general levels of concept development for three age groups.

3.8. Select or recommend activities appropriate to the specific group visiting the field station.

3.8

- The amount of time spent on-site and the frequency of visits for a particular group will affect the choice of activities. Many classes will visit only once; depending on the objective for outdoor classrooms and the ability level of the group, recommend activities to create the one impression that is desired. Classes that regularly visit the station are probably following an EE curriculum which uses a progression of activities to build on what they know.
- Find out from the teacher or leader beforehand what the group knows about EE: have they studied from a historical perspective? biological? ecological? political/social? Their present knowledge and skills will determine the activities suggested as will the direction of their studies.

Mental and Physical Growth Characteristics of Children at Various Age Levels

Preschool
2-7 years

Elementary
7-11 years

Adolescent
12-18 years

Cognitive Development

Beginning to classify similar objects; understand more by intuition than conscious reasoning; cannot reverse thought processes (they can observe changes and see a final produce but cannot imagine how to return it to the original state); can't conserve quantity (after observing water from a tall glass fill a short glass, they will say the tall glass holds more, even though both hold the same)

Classify into broader groupings; can reverse thought processes; ability to "conserve" quantities of objects that change shape or position; can manipulate information about real objects but not abstract concepts; can reason deductively from observation

Can reason deductively; beginning to reason on verbal and abstract levels; can discuss problems and potential solutions, concerned about why things happen; demand proof for statements made

Physical Growth/Coordination

Rapid growth; large muscle coordination better than eye/hand and other small muscle coordination

Steady, continuous growth; ability to coordinate increases; small muscle coordination improves along with large muscle coordination; progress in coordination may be arrested (for preadolescents) by periods of clumsiness and awkwardness

Rapid growth; sometimes erratic; ability to coordinate increased though there are still periods of clumsiness; perfecting coordination of fine muscles

For additional explanations see Machlis, G. and McDonough, M. 1978. "Children's Interpretation: A Discovery Book for Interpreters," Cooperative Park Studies Unit, College of Forest Resources, Univ. of Washington, Seattle, WA.

- Physical limitations also play a part; while all buildings should be accessible, some sites (trails, etc.) may not be, without making special arrangements.

3.9. Progress from awareness to action. Most outdoor classroom sessions will begin at an awareness level, but most environmental educators would agree that unless the educational experience moves beyond awareness to the development of problem-solving skills and eventually to action, the experience will be sterile. The interest and concern for the environment aroused in the individual must go somewhere--other than to motivate someone to go tromping through the woods, which may in itself generate new environmental problems. Zeitler (1974:54) stated that prerequisites are necessary before students can actively and effectively consider local environmental problem areas:

3.9

- (1) They must be able to observe and identify components that comprise their environment. Along with this development, students need assistance in organizing a management system for classifying and recording the observed components. He suggests that the assistance of a leader is vital at this point.
- (2) Students must then identify and record interactions among the components they have identified.

With this basis they can proceed to "problem solving" situations:

- (3) Identification of an environmental problem.
- (4) Identification and analysis of possible causes of the problem.
- (5) Identification of alternate solutions to an environmental problem.
- (6) Evaluation of possible effects of each alternative.

3.10. Resources.

3.10

Benjamin, J.C., Moeller, G.H., and Morrison, D.C. 1977.
"Measuring Environmental Attitudes of Elementary School

Students," Children, Nature, and the Urban Environment: Proceedings of a Symposium Fair, USDA Forest Service General Technical Report NE 30: 95-100, Northeastern Forest Experiment Station, Broomall, Pa.

Brown, W.E. 1971. Islands of Hope, National Recreation and Parks Association, Arlington, Virginia.

Hawkins, D.C. and Vinton, D.C. 1973. The Environmental Classroom, Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

Roth, R.E. 1979. "Conceptual Development and Environmental Education," Journal of Environmental Education, Vol. 11, No. 1:6-9.

Steffenson, D. 1975. "Beyond Survival," Journal of Environmental Education, Vol. 7, No. 6: 7-11.

Zeitler, W.R. 1974. "The Environmental Ecological Web," Journal of Environmental Education, Vol. 6, Winter: 53-56.

3.11. A curriculum in EE should include a progression of activities from the awareness level to active problem-solving situations for all age levels. Certainly workshops in environmental education should introduce these curricula and stress a comprehensive, progressive approach to EE. At the same time it might also be wise to suggest money saving environmental education techniques and how to continue EE even in the absence of funds for trips to the field station.

3.11

3.12. Ritz (1977:42) emphasizes that beginning workshops in environmental education should produce teacher enthusiasm for EE and give some practical suggestions for "getting on with it." He recommends that workshops:

3.12

- deal with basic science as necessary but not be dominated by science
- be appropriate for teachers of all backgrounds and interests
- provide training in methods of environmental education as well as content

- have a strong motivational impact on participants
- bring teachers into direct involvement with the environment being studied
- engage teachers in value analysis. (See 3.37-40)

The workshop leader should be familiar with environmental education curricula used in the schools in the area; should suggest ways to supplement EE using the field station, using FWS environmental education packets; and should suggest situation-specific activities. Trying to assist teachers in doing the best they can with available resources is a worthwhile goal.

3.13. Resources.

3.13

Euston, Carol. 1976. A Better Place to Be: A Guide to Environmental Learning in Your Classroom, Tennessee Valley Authority in cooperation with U.S. Department of the Interior, Washington, D.C.

Griffith, Gail. 1972. "Environmental Studies: A Curriculum for People," Science and Children, 9:18-21, January-February.

Ritz, W.C. 1977. "Involving Teachers in Environmental Education," Journal of Environmental Education, Vol. 8:40-47.

Implications for Interpretation

3.14. Use language the audience will understand. Characteristics of audiences for interpretive activities are not as easily identifiable as for outdoor classrooms. The planner will usually not have the advantage of knowing that 25 sixth graders will be at the station for three hours next Thursday. Probable age ranges, numbers of visitors, their origins, time spent at the station, and activities pursued is the most that will be known about the audience. Most stations will have both local visitors and tourists, and there is no "average" visitor. Media and activities should be prepared for different levels of comprehension and different interests and needs.

3.14

3.15. Interpretation for children cannot be a "watered-down" version of adult activities. It must, of course, relate to their needs and abilities, which may vary greatly with age and experience. Some general suggestions for interpretive techniques to use with various audiences follow.

3.15

Resources

Machlis, G. and Field, D.R. 1974. "Interpreting Parks for Kids--Making It Real," Trends April/May/June: 1925.

Machlis, G. and McDonough, M. 1978. "Children's Interpretation: A Discovery Book for Interpreters," Cooperative Park Studies Unit, College of Forest Resources, University of Washington, Seattle, Washington.

3.16. For some special populations, reading or hearing the words is the first problem that must be overcome. For the non-sighted, information can be best presented by sound, such as cassette tape players, rather than by Braille, since only five to ten percent of the blind read Braille. Besides that, Braille signs are extremely susceptible to vandalism. Steven Seven (1980:39) also states that, "Because it is unlikely that a blind person would visit an interpretive facility without a sighted companion, it may be that no special provisions are required; the sighted companion may simply read the text for the blind visitor." An obvious problem with the latter is that the focus of the text may also be something visual.

3.16

3.17. Beechel (1975:39) suggests that most deaf people use fingerspelling and the language of signs. Fingerspelling can be learned in a relatively short time. "If the interpreter will make the effort to learn fingerspelling, at least some of the interpretive programs will be available to deaf people."

3.17

3.18. Resources.

3.18

Beechel, J. 1975. Interpretation for Handicapped Persons: A Handbook for Outdoor Recreation Personnel, Cooperative Park Studies Unit, College of Forest Resources, University of Washington, Seattle, Washington.

Wagar, J. 1976. Cassette Tapes for Interpretation. USDA Pacific Northwest Forest and Range Experiment Station, PNW-207.

3.19 Use examples and comparisons from the background and experience of the audience. If the audience is mostly local residents, examples can be drawn from the area, as in 3.7; however, if the audience draws from a larger geographical area, other comparisons are suggested:

3.19

- Relate to seasonal weather changes, general weather characteristics, national geography
- Relate to the history of the state or country (heroes and events common to all Americans)
- Relate to nationally known sports events, people
- Relate to common subjects or personalities in the media. Television and other media have had significant impact on creating a common denominator in this country and have minimized many regional differences.
- Relate to common needs of every person: physiological, safety, social, personal recognition.

3.20. Build on a progression of concepts. Interpretive activities can be structured to provide a progression from awareness and concern for natural resources to a more active investigation and goal directed action. Certainly there should be awareness-level interpretation for a variety of age and ability levels. And most interpretive exhibits, brochures, demonstrations, and so on will be at the awareness level, but these should also entice and/or challenge the visitor to delve further into the subject. The station should have supplementary interpretive/ educational resources available for purchase or loan. Challenge your audience--aim for provocation!

3.20

3.21. Interpretive media and presentations should build on relative concepts, within one overall theme. Suggest a theme with an introductory story, picture, poem, whatever; support the idea with related images, stories, analogies, comparisons and then tie the "package" into a neat whole with the concluding

3.21

BUILD ON THE KNOWN, FOCUS ON THE NEW, AND MAKE IT FUN!

-rationale-

3.25. A close corollary to the concept that all learning is based on past learning is that the human brain continually seeks out new experiences and challenges and notices new information. So if any learning is going to occur, new experiences must be introduced or offered. This can be illustrated in a memory most of us share—or can imagine: Picture a classroom with the usual, traditional activities occurring; enter a fly—and what does everyone focus on? The unusual fly, of course, unless the room is already filled with flies! Try the unexpected; it will be remembered.

3.25

The "Natural" Way to Learn: Relevant Challenges

3.26. Each of us from birth on has learned vast amounts of information, skills, and knowledge without anyone teaching us. We continually try to make sense of perplexing situations: some theorists have stated that the brain is continually seeking new information and trying to order it or distinguish patterns. We try one response and if it doesn't work we try another until the right response is "learned." We learn by doing.

3.26

When presented with a challenge—something new that we can't deal with—we seek to find a response (learn) to deal with it by:

- trial and error, guessing, experimentation
- watching others, observing nature, etc.
- trying whatever way available to find out more information: read, ask questions, compare to what is already known.

3.27. The drive for new experiences and challenges is also described by theories of recreation and the "recreational experience." Recreational experiences range on a continuum from the usual to the unusual; anything from thinking to skydiving can be recreational because recreation is a state of mind. An individual's perception makes something recreational; the type of activity involved or the time it occurs does not make something recreational. Some characteristics of the recreational experience are that it:

3.27

- provides mental and/or physical stimulation and challenge
- produces feelings of competence, accomplishment
- is intrinsically rewarding
- includes a feeling of control
- satisfies human needs and desires.

3.28. Learning experiences and recreational experiences could be described as two sides of the same coin. Educational efforts are most effective when the play experience is duplicated and participation is voluntary. Since most public use activities on field stations are voluntary, applying the concept of making the educational activities recreational, and vice versa, may be very effective.

3.28

3.29. Resources.

3.29

Bruner, Jerome. 1976. Play--Its Role in Development and Evolution, Basic Books, New York.

Csikszentmihalyi, M. 1975. Beyond Boredom and Anxiety, Jossey-Bass, San Francisco.

Wagar, J.A. 1974. "Interpretation to Increase Benefits for Recreationists," USDA Forest Service General Technical Report NC-9, North Central Forest Experiment Station, St. Paul, Minnesota.

Implications for Outdoor Classrooms

3.30. Several characteristics of "natural" learning are applicable to outdoor classrooms:

3.30

- there should be a challenge that is perceived as being important to the individual
- the situation should be real, not contrived
- the solution should be discovered by the individual
- the whole person should be involved; in fact, the more "input" the brain receives from the various senses, the quicker a solution will be reached.

3.31. Just the fact that outdoor classroom activities take place out of the school building and in a new and different setting will make the experience fun. The field station offers tremendous diversity and countless challenges for students. And certainly the problems affecting the station affect the students as well, although they may not be aware of their impact on environmental problems. Some of the first activities in outdoor classrooms should focus on helping students discover their relationships to fish, wildlife, and habitats, and how their actions affect the environment. A challenging, relevant topic is likely to be eagerly investigated. Choose and/or recommend activities that:

3.31

- encourage all students to participate rather than watch

- encourage students to discover for themselves the "right" answer or relationship, make deductions, apply what they observe; in other words, enable the learner to find out for him/her self.
- allow the student to accomplish with some degree of success (~~demands leader's knowing levels of audience skill/concept development~~)
- take students into the "real world"
- involve the students with their bodies, their imaginations, and their senses: the whole person
- allow students to discover how the activity personally involves them (demands knowledge of background)
- present a problem relevant to audience members (taking into account ages, needs, ability, etc.). Bigge (1964:344) suggests that the problem should be so compelling that students really want to study it but not so overwhelming that they give up
- allow a choice among a number of activities
- involve as many of the senses as possible
- involve students both physically and mentally

3.32. Environmental education and interpretation have always stressed first-hand experiences, real objects, a "one world" approach to learning. The real world is a unity, not a series of separate, unrelated disciplines, which is why environmental educators have insisted on a multidisciplinary/interdisciplinary approach to education. No one subject is more "environmental" than any other. A problem-oriented approach, rather than a subject-matter approach, is more reflective of the world as it really is. Environmental education should be an experience of active involvement in an environment where the individual faces and resolves problems in a real situation; one's own community and the field station are the best places to start.

3.32

3.33. Resources.

3.33

Clark, B.B. 1979. "A New Partnership: Environmental Education and Recreation," Trends, Vol. 16, No. 1:10-13.

Horn, B.R. 1971. "Creating Environmental Awareness," Trends, Vol. 8, No. 2:10-13.

Noenning, D.L. 1979. "Environmental Education: A Step on the Involvement Ladder," Reclamation ERA, Vol. 65, No. 1:11-19.

Swan, M.D., ed. 1970. Tips and Tricks in Outdoor Education: Approaches to Providing Children with Educational Experiences in the out-of-Doors, Interstate Printers & Publishers, Danville, Illinois.

3.34. Attitudes and values are certainly part of the "whole person" and intimately involved in any decision made to solve problems affecting people or the environment. Many environmental educators agree that the study of values is basic to EE but there is not agreement on the approach to use. Every problem has a moral component and people must be able to recognize that component and deal with it as part of the decision-making process. Values clarification is frequently mentioned in the literature as a technique to help one examine beliefs, desires, behavior without imposing someone else's value system or criticizing the values of the holder. Harshman (1978:30) stated seven objectives for value clarification that should be integrated into an EE curriculum at all levels:

3.34

- (1) To encourage students to make choices and to make them freely
- (2) To help students discover and examine available alternatives when faced with choices.
- (3) To help students weigh alternatives thoughtfully, reflecting on the consequences of each alternative.
- (4) To encourage students to consider what it is that they prize and cherish.

- (5) To give students opportunities to make public affirmation of their choices.
- (6) To encourage students to act, behave, and live in accordance with their choices.
- (7) To help students examine repeated behaviors or patterns in their lives.

3.35. Value analysis incorporates values clarification plus procedures to analyze the value concepts implicit in all policy decisions. The consequences of policy decisions are examined by applying tests of rational consistency to decisions. The process described by Harshman (31) involves:

3.35

- (1) Identifying and clarifying the value question.
- (2) Gathering and organizing the facts or statements claimed to be facts.
- (3) Assessing the truth of facts.
- (4) Showing that the facts are related to the value question.
- (5) Arriving at a possible decision or solution.
- (6) Deciding if the possible solution or decision is acceptable to the individual or individuals making the decision.

3.36. Teacher workshops in environmental education could present "environmental dilemmas" and a series of questions that help participants identify and analyze the value/attitude component of problems. Both teacher and student must be involved in the study of values; both are learners and both must be aware of their existing values and how their application would affect the environment.

3.36

3.37. Resources.

3.37

Chazan, B.I. and Soltis, J.F. (eds.). 1973. Moral Education. Teachers College Press.

Harshman, R. 1978. "Value Education Processes for an Environmental Education Program," Journal of Environmental Education, Winter.

Kauchak, et. al. 1978. "The Need for Education, not Indoc-trination," Jcurnal of Environmental Education, Fall: 19-22.

Kirschenbaum, H. and Simon, S.B. (eds.). 1973. Readings in Value Clarification. Minneapolis, MN: Winston Press.

Miles, J.C. 1978. "The Study of Values in Environmental Education," Journal of Environmental Education, (IX) 2:5-17.

Purpel, D. and Ryan, K. (eds.). 1976. Moral Education . . . It Comes with the Territory, McCutchan Pub. Co., Berkeley, California.

3.38. One need common to us all is for belongingness or affiliation and the learning environment is improved by enhancing group interaction. One research study (Young, et al.) found that school groups that were allowed to divide into their own subgroups for a self-guided trail hike were happier, more receptive, and remembered more than the children who were divided into small groups by the leader. (Young, D. et al. no date, "The Use of Interpretive Media in EE" Institution for Social and Policy Studies, Yale University.)

3.38

Implications for Interpretation

3.39. Interpretation could be defined as "recreational education." It is primarily an educational activity, but since the audience is not "captive" but freely chooses to participate during leisure time, the experience must be enjoyable. The interpreter must plan programs that:

3.39

- are rewarding to visitors
- offer a variety of approaches--because in a sense each person is a different audience with unique needs and wants
- touch people's lives, involve them
- put people at ease

3.40. According to Brown (1979) interpretation is a "brain compatible way to learn. His premise is that a learning experience that involves "right" brain faculties (the intuitive, emotional, sensory aspects of the mind) and which also incorporates "left" brain faculties (logical, factual, verbal) will have a high probability of being a memorable experience. Likewise any learning experience that neglects the intuitive, emotional, and sensory aspects of the human mind will be less memorable than it

3.40

could otherwise have been. He states that because interpretation has always stressed active involvement, the manipulation of objects, the use of original objects and first hand experiences, learning is natural and interpretive programming can help keep it that way. Interpretation utilizes the entire brain, the entire learning system. (Brown, B.F. and Cherem, G.J. 1979. "Interpretation: A "Brain-Compatible" Way to Learn," Journal of Interpretation, Vol. 6, No. 2:2-12.)

3.41. Interpretive media (or presentations) should provoke people to think and reach their own conclusions. "Doing" is more effective than "watching" and drawing one's own conclusions is another means of involving an audience.

3.41

3.42. Use language to involve the audience:

3.42

- Use active verbs and descriptive language. Rather than saying, "Gulls are scavengers at beaches," say "Gulls clean up the beaches by eating dead fish and discarded picnic lunches."
- Use fresh analogies, metaphors, similes; avoid trite figures of speech: Say "As white as . . . whipped cream . . . or . . . strawberry blossoms . . . or cumulus clouds . . . or Ivory soap," but don't say "As white as snow!"
- Use personal words: "You can see. . ." rather than "It can be seen"; "Most of us agree" rather than "It is generally agreed . . ."
- Tell a story or use poetry to evoke images and emotions

3.43. Consider writing several types of interpretive brochures for the same wildlife observation trail, giving the audience a multidisciplinary array of opportunities:

3.43

- One approach could emphasize the artistic expressions found in (or inspired by) natural settings: artistic forms, music, poetic descriptions of wildlife and wildlands.
- Emphasize a concept or theme from science, showing a variety of manifestations (adaptation, for example).
- Plan a visitor experience of the trail which encourages

an appreciation of the site using senses other than sight. This is especially important for the nonsighted in the audience, but can be enjoyed by people of all ages.

3.44. Interpretive brochures should:

3.44

- Communicate one theme to a particular audience; visuals, text, layout should all support one main idea.
- Use language appropriate to the audience
- Use comparisons, figures of speech, concepts comprehensible to audience
- Involve the imagination, raise a question to which the reader will want an answer.
- Involve the senses: appeal to the eye by using space, photographs, drawings, color; refer to textures, smells, tastes, sounds.

3.45. Resources.

3.45

McIntosh, P.A. 1976. "Signs and Labels," in Sharpe, G.W. Interpreting the Environment, John Wiley and Sons, New York.

Sharpe, G.W. 1976. "Selecting the Interpretive Media," in Sharpe, G.W., Interpreting the Environment, John Wiley and Sons, New York.

3.46 Interpretive exhibits should involve the senses:

3.46

- Use color to create a mood; cool colors (blue, green) are calming; warm colors (red, yellow, orange) are stimulating
- Use some real objects that can be touched, handled
- Real objects, artifacts, etc. (even though enclosed in glass) attract more attention than photographs or drawings--but photographs, art work, and other visuals are more effective than verbal descriptions.
- Refer to any smells or tastes related to the exhibit through comparisons or suggest where to go for the "real thing"

3.47. Resources.

3.47

Cherem, G.J. 1979. "Interpretive Exhibit Design," Proceedings First Interpretation Central Training Institute, pp. 5-10, Interpretation Central, P.O. Box 7884, Ann Arbor, Michigan.

Kuehner, D. 1982. Interpretive Design Guidelines. Region 1 U.S. Fish and Wildlife Service, 500 NE Multnomah Street, Portland, OR 97232 (in print).

Machlis, G. and Machlis, S. 1974. "Creative Design for Bulletin Boards," Cooperative Park Studies Unit, College of Forest Resources, University of Washington, Seattle, Washington.

Shiner, J.W. and Shafer, E.L., Jr. 1975. "How Long Do People Look at the Listen to Forest-Oriented Exhibits?" USDA Forest Service Research Paper NE 325, Northeastern Forest Experiment Station, Broomall, PA.

Veverka, J.A. 1978. "Why No One Comes to Your Interpretive Programs, or An Examination of Park Visitor Motives for Interpretive Program Preferences," The Interpreter, Fall:17-20.

3.48. Trails should also provide diverse sensory experiences.

3.48

Gustke Gustke and Hodgson (1980:61) found that the most pleasurable experiences on interpretive and other trails immediately followed an "environmental discontinuity" which they defined as the boundary between distinctly different environments or other points where large changes in the assemblage of sensory experiences occurred. They suggested that messages received at these points would be more easily learned and longer retained than messages received elsewhere on the trail. This finding coincides with the theory that the brain notices--and seeks out--the unusual, the new experience. (Gustke, L.D. and R.W. Hodgson. 1980. "Rate of Travel Along an Interpretive Trail," Environment and Behavior, Vol. 12, No. 1:53-63.)

3.49. Personal-Centered Interpretation. An interpreter face-to-face with visitors should be in an ideal position to personally involve an audience. He or she can determine immediately whether the group is more concerned, for example, about birds than anything else and through questioning can find out what they already know. The interpreter can also respond to any unique situations that may arise. The personality of the staff person can enliven the experience, making it memorable and enjoyable. Unfortunately, personal-centered interpretation is probably rare in the FWS because of limitations in staff time.

3.49

However, on the occasion when personal-centered interpretation can occur, here are some suggestions.

- Always seek to involve the audience: ask questions, tell a suspense-ful story, use gestures, maintain eye contact.
- Adapt questions, stories, comparisons to the various ability levels of the audience; don't just aim for the "average" visitor.
- Demonstrate, rather than describe, or better yet, let the audience participate when appropriate.
- Strive for a conversation, not a lecture. Use pauses, variations in volume and speed to sustain interest.
- Relate concepts and relationships to one main idea; establish the theme in the introduction, follow up with illustrations, visuals, examples, etc. in the main body of the presentation; tie it together in the conclusion.
- Use real objects and visual aids.
- Smile! for nonverbal reinforcement. Reward the visitor with verbal reinforcers such as "That's an insightful question" or "Good answer."
- Be enthusiastic and well prepared.
- Be aware of body language and what it communicates: hand, head, or body gestures; eye contact or lack of it; clothing; posture--all tell something about the speaker and what he or she thinks about the subject matter and the audience.

3.50. Resources.

3.50

Boulanger, F.D. and Smith, J.P. 1973. "Questioning Techniques," in Educational Principles and Techniques for Interpreters, USDA Forest Service General Technical Report PNW-9:12-16.

Grater, R.K. 1976. The Interpreter's Handbook, Southwest Parks and Monuments Association.

Risk, P.H. 1976. "The Interpretive Talk," Interpreting the Environment, G.W. Sharpe, ed., Wiley, New York, pp. 159-176.

3.51. Enhancing group interaction. For some people the need to belong or be affiliated with a group is very strong. Activities that enhance group interaction will improve the experience for many. Selfguiding trails allow for small intimate groups. Some brochures could be written with the idea of having a parent be the "interpreter" for the children by suggesting questions to ask, stories to tell, and at-home activities to enhance the experience.

3.51

3.52. Don't ignore older adult visitors. They make up a significant (and growing) part of the audience at many field stations. Researchers (Bultena: et al. 1978:41) have found that:

3.52

- Retirees usually spend more time at interpretive centers than the "average" visitor and many would like more opportunities for in-depth study.
- Many older persons participate in interpretive programs for the opportunity for social interaction. This suggests that formal, structured programs would be less effective than self-guided activities and informal conversations with staff. Some may be willing to conduct some interpretive "programs."
- Because many retirees visit the same places year after year, a wide variety of interpretive activities is recommended.
- Trail signs or brochures should relay accurate information about trail lengths and conditions.

3.53. Resources.

3.53

Bultena, G., Field, D., and Renninger, R. 1978. "Interpretation for the Elderly--A Study of the Interpretive Interests of Retired National Parkgoers," Journal of Interpretation, November.

Renninger, R. 1977. "An Interpreter's Guide to Retired Visitors," Cooperative Park Studies Unit, College of Forest Resources, University of Washington, Seattle, Washington.

Implications for Recreation

3.54

3.54. When anything can be recreational for somebody, the bulk of recreation programming comes back to the individual characteristics/needs of the audience. However, the general characteristics of the recreational experience can be applied to recreation on the field station and some suggestions offered. Keep in mind that variety is important--if a smorgasbord is available, there should be something for everyone. Crandall (1980:49) identified seventeen motivational categories for recreation, which are listed below:

- (1) "Enjoying nature, escaping civilization (to get away from civilization for awhile; to be close to nature)
- (2) Escape from routine and responsibility (change from daily routine; to get away from the responsibilities of everyday life)
- (3) Physical exercise (for the exercise; to help keep in shape)
- (4) Creativity (to be creative through art, writing, music)
- (5) Relaxation (to relax physically and mentally)
- (6) Social contact (to do things with friends; to get away from other people)
- (7) Meeting new people (to talk to new and varied people; to build friendships with new people)
- (8) Heterosexual contact (to be with people of the opposite sex; to meet people of the opposite sex)
- (9) Family contact (to be away from the family for awhile; to help bring the family together more)
- (10) Recognition, status (to show others one's abilities)
- (11) Social power (to have control over others; to be in a position of authority)
- (12) Altruism (to help others)
- (13) Stimulus seeking (for the excitement; because of the risks involved)
- (14) Self-actualization (seeing the results of your efforts; using a variety of skills and talents)

- (15) Achievement, challenge, competition (to develop skills; to compete; to test limits)
- (16) Killing time, avoiding boredom (to keep busy; to avoid boredom)
- (17) Intellectual aestheticism (to use one's mind; to think about personal values)"

(Source: Crandall, R. 1980. "Motivations for Leisure," Journal of Leisure Research, No. 12:45-53.)

3.55. Most people visit the station for recreation, so unless something happens to ruin the experience, they are prepared to enjoy it. Long lists of "Don'ts" will create a feeling that little is permitted and they aren't welcome. Most people appreciate a relaxation of rules and constraints on behavior during leisure time. Signs and brochures could be lists of "do's" --or use humor or an interpretive approach to avoid the devastating effects of a sign that says, "Everything is prohibited unless it's permitted." When regulations interfere with fun, they will probably be ignored. What's more, there are always some people who find recreation in defying authority (see #11 above) and a "Don't feed the Deer" sign is an invitation to do just that. Indirect controls and use of interpretive/educational techniques to change behavior are usually more effective and certainly more subtle and less obtrusive. (More on indirect controls in paragraph 3.62)

3.55

3.56. A physical or mental challenge is recreational for most people--if they can meet the challenge. Below are some examples for how this motivation could be utilized.

3.56

- Spotting a rare wildlife species. When consistent with management policies, informational brochures could imply that photographing a certain species takes great skill and patience and very few visitors are successful.
- Identifying more than ____ bird species (or whatever) could be a challenge.
- A puzzle board, computer, or some other means of posing a

question and then verifying whether the answer is correct will be an enjoyable challenge for many (although the activity will probably be recorded as an Interpretive activity).

- Hiking an arduous trail or some other physically strenuous activity is recreational for some.

3.57. Walking in, relaxing in, and driving through the refuge and seeing a natural environment that 's different from their normal setting is recreational for many people. Other than maintaining the station itself, about the only programming suggestion is to "keep it natural." Signs and buildings should blend pleasingly with the natural environment. Trails and roads should go through a variety of habitats and offer the possibility of seeing a variety of wildlife. Any barriers used between campsites, picnic spots, etc. should be natural.

3.57

3.58. Many people want to experience the outdoors beyond an awareness level. They want to see as much as they can and learn all about the habits and habitats of fish and wildlife. The experience can be improved by:

3.58

- Encouraging artistic creations centering on fish/wildlife/wildlands. Creative expression through poetry, prose, photography, painting, sculpting, music, and so on is a recreational experience. The creations can also affect the wildlife/wildlands observation experience of the viewer who sees, hears, feels something for the first time because of the art work. "Encouraging" this experience could involve displaying the artwork in the visitor center, holding a wildlife/wildlands art show, providing photography blinds; restricting access to certain parts of the station to small numbers of visitors.
- Providing viewing towers or blinds designed to increase chances of seeing wildlife.
- Designing trails, tour routes to increase chances of seeing wildlife.

- Providing information on identification of wildlife-plants, etc.
- Providing interpretive materials or indepth study materials of station wildlife/wildlands.
- Allowing access to station at times when wildlife are most active.

3.59. Resources.

3.59

Crandall, R. 1980. "Motivations for Leisure," Journal of Leisure Research, Vol. 12, No. 1:45-53.

Driver, B.L. and Tocher, S.R. 1970. "Toward a Behavioral Interpretation of Recreational Engagements, with Implications for Planning," in Driver, B.L., Elements of Outdoor Recreation Planning, University of Michigan.

Knopp, T.B. 1972. "Environmental Determinants of Recreation Behavior," Journal of Leisure Research, Vol. 4, Spring: 129-138.

Kraus, R. 1971. Recreation and Leisure in Modern Society, Meredith Corporation, New York.

Pierce, R.C. 1980. "Dimensions of Leisure. I: Satisfaction," Journal of Leisure Research, Vol. 12, No. 1:5-19.

3.60. The presence--or absence--of other people will affect the recreational experience. A person seeking solitude may be disturbed if s/he meets one person on a wildlife observation trail. Conversely some people want to socialize and meet new people during leisure time--and obviously both types cannot be satisfied without some adjustments in scheduling or opportunities offered. The usual connotation of "carrying capacity" is probably biological: what is the total number of a species that can be sustained in a certain area under certain conditions? will a site be adversely affected by inviting people to pursue an activity; how many people can be involved and for how long, etc. However, each site or activity also has a recreational carrying capacity which must be considered.

3.60

3.61. Carrying Capacity: What's the Formula? Most managers would probably welcome a formula that would tell them "how much is too much" to be used as a basis for limiting access to a

3.61

trail, stream, or whatever. Unfortunately the number of variables and the interaction among variables makes a formula impossible. Carrying capacity is a management decision that demands analysis of the site, management objectives, and visitor preferences and perceptions. It's also a function of what the activity involves, the number of people, duration, and recovery time (time lapse between use periods). Physical, biological, social, and psychological components are all involved. Management must decide the amount and type of use a site can sustain within a certain period of time without causing unacceptable harm to the station resource or the recreational experience of the visitor. Management must determine how much change is acceptable.

3.62. The various wildlife/habitat management plans developed for each station analyse the condition and attributes of sites. Lime (1979:37) suggests that almost any site can be "hardened" to accommodate the type of recreational opportunity desired by management. However, the design chosen to harden the site may alter conditions to such a degree that the user is no longer attracted to the area. His table of various methods of managing sites and people to meet desired management objectives is included on the next page. The methods chosen will, of course, depend on objectives for the site and the visitor experience. In general he recommends the more subtle methods of influencing visitor behavior.

3.62

3.63. The FWS has already determined the capacity at most stations for certain recreational uses: ORVs = 0; waterskiing = absolute minimum levels; rock climbing = 0 or minimum levels, and so on. FWS has decided that not every recreational activity desired by the public will be provided. Recreation will be provided if compatible with the resource, if funding exists, and if a need has been documented. For the most part, then, wildlife/wildlands oriented recreation is favored over non-wildlife/ wildlands oriented recreation, which is being phased out where possible. For the activities allowed, the outdoor

3.63

Some Measures to Control the Character and Intensity of
Recreational Use to Meet Desired Management Objectives*

Type of control	Method	Specific control techniques
Site Management (Emphasis on site design, landscaping and engineering)	Harden site	Install durable surfaces (native, nonnative, synthetic) Irrigate Fertilize Revegetate Convert to more hardy species Thin ground cover and overstory
	Channel use	Erect barriers (rocks, logs, posts, fences, guardrails) Construct paths, roads, trails, walkways, bridges, etc. Landscape (vegetation patterns)
	Develop facilities	Provide access to underused and/or unused areas Provide sanitation facilities Provide overnight accommodations Provide concessionaire facilities Provide activity-oriented facilities (camping, picnicking, boating, docks, other platforms, playground equipment, etc.) Provide interpretive facilities
Direct Regulation of Use (Emphasis on regulation of behavior; individual choice restricted; high degree of control)	Increase policy enforcement	Impose fines Increase surveillance of area
	Zone use	Zone incompatible uses spatially (Hiker only zones, prohibit motor use, etc.) Zone uses over time Limit camping in some campsites to one night, or some other limit
	Restrict use intensity	Rotate use (open or close roads, access points, trails, campsites, etc.) Require reservations Assign campsites and/or travel routes to each camper group in backcountry Limit usage via access point Limit size of groups, number of horses, vehicles, etc. Limit camping to designated campsites only Limit length of stay in area (max./min.)
Indirect Regulation of Use (Emphasis on influencing or modifying behavior; individual retains freedom to choose; control less complete, more variation in use possible)	Restrict activities	Restrict building campfires Restrict fishing or hunting
	Alter physical facilities	Improve (or not) access roads, trails Improve (or not) campsites and other concentrated use areas Improve (or not) fish or wildlife populations (stock, allow to die out, etc.)
	Inform users	Advertise specific attributes of the area Identify the range of recreation opportunities in surrounding area Educate users to basic concepts of ecology Advertise underused areas and general patterns of use
	Set eligibility requirements	Charge constant entrance fee Charge differential fees by trail, zone season, etc. Require proof of ecological knowledge and recreational activity skills

*Source: Lime, D.W. 1979. "Carrying Capacity," Trends,
Vol. 16, Spring: 37-40

recreation planner and the manager must determine the recreational carrying capacity and how to maintain acceptable limits.

They must consider:

- How various uses affect the experience, e.g. how does hunting affect the wildlife observation experience and vice versa?
- How does increased numbers at any one time affect the experience? e.g. Are you less likely to see a swan if 50 cars have driven down the road in an hour than if five have? How is the quality of the hunting experience affected by having all possible hunters on site at the same time?

- What are the attitudes of visitors toward crowding? All-dredge (1973:29) suggested some variables which might be indicators of visitor capacity; he stated that "these characteristics should be studied with respect to their frequency, dispersion, contagion, incidence, and intensity and should be related to the level of occupancy at which they occur." The public behavior characteristics are:

(1) Queue formation: percent of those persons intending to join a queue who are dissuaded from joining it by virtue of its length, etc.

(2) Littering: a marked increase in the amount of litter discarded other than in provided receptacles.

(3) Loitering: a marked increase in the percentage of visitors wandering more or less aimlessly, seeking an opportunity to participate in any activity available except for the congestion caused by other visitors engaged in that activity.

(4) Turnover: significant changes in the mean length of time visitors remain in the area.

(5) Resource abuse: changing relative frequency with which visitors walk or drive into restricted, unauthor-

ized, or protected areas.

(6) Acrimony: changes in the relative frequency of visitor complaints to area officials concerning the behavior of other visitors.

(7) Mobility constraints: appearance of bottlenecks in vehicular or pedestrian traffic routes.

(8) Accidents: changes in the incidence of accidental damage to personal property caused by actions of visitors.

(9) Visitor inquiries: changes in the frequency of visitor inquiries about nearby accessible alternative recreational opportunities.

3.64. Resources.

3.64

Allredge, R.B. 1973. "Some Capacity Theory for Parks and Recreation Areas," Trends, Oct.-Dec:20-30.

Lime, D.W. 1979. "Carrying Capacity," Trends, Vol. 16, No. 2:37-40.

Lucas, R.C. and Stankey, G.H. 1974. "Social Carrying Capacity for Backcountry Recreation" in Outdoor Recreation Research: Applying the Results, USDA Forest Service Gen. Tech. Report NC-9: 14-21.

Ohmann, L.W. 1974. "Ecological Carrying Capacity," in Outdoor Recreation Research: Applying the Results, USDA Forest Service Gen. Tech. Report NC-9:24-27.

Stankey, G.H. 1973. "Visitor Perception of Wilderness Recreation Carrying Capacity," USDA Forest Service Research Paper INT-142.

Implications for Program Information

3.65. One need common to every potential audience is to be informed. People need to know about opportunities to take part in planning the development and management of public lands. And they need information about all opportunities for education and recreation on the field station. Communication techniques chosen must actually reach the audience and create a favorable impression for the FWS. Information should include:

3.65

- How to find the field station

--directional signs at strategic locations, including

As in 3.4 and 3.14 the language of signs and informational brochures must be understood by the visitor. Unless explained, "regionalisms" should be avoided on signs. Visitors from the south may be confused by a "Don't-park-on-the-berm" sign at a station in Minnesota.

3.66. Information on the field station should also be communicated off-site. The opportunities available for the public should be promoted in a consistent manner using a variety of methods. The purposes and goals of the FWS and the station should also be communicated along with schedules, changes in wildlife populations, and other subjects of interest.

3.66

3.67. Just as the audience for outdoor classrooms is as varied as the number of individuals involved, the public is a diverse mixture of groups that may be reached in different ways. It makes economic sense to publicize first to the public most likely to be interested. For example, a special opportunity to observe an unusual bird would interest members of the Audubon Society and a phone call or letter may be all that's needed to attract an audience. Or a letter or flyer describing EE opportunities or workshops sent to Boards of Education, principals, and superintendents in the area would be more effective in reaching the audience than an article in the local paper.

3.67

3.68. Public speeches are a means of publicizing FWS activities and wildlife resources. The only cost involved is the staff time for preparing and giving the talk; it's a service that can pay off in good relations with the community. The techniques of personal-centered interpretation apply, for example:

3.68

- Know the audience and what subjects and techniques will interest and involve them (visuals? jokes? challenging questions? discussion?)
- Organize the talk around one theme and use illustrations that will appeal to the audience
- Relate something about the station or FWS that will interest the audience
- Follow an outline; don't read the speech--that will involve no one

- Involve audience personally by using eye contact with many individuals; don't just single out one friendly or familiar face to talk to
- End the talk on time

See also paragraphs 3.14, .19, .20, .42, .49 and Talks by Thompson, D.D. 1968. National Park Service.

3.69. An open house or a special event can be an especially effective means of publicizing the field station and the FWS. This is a time to acquaint people with what the station does, how it manages the resource and why it's important to do so. This may be the one time of the year when every staff person becomes an interpreter and ambassador for the station. It's important to:

3.69

- Plan and promote far enough in advance to reach as large an audience as possible.
- Decide on what message you wish to convey and how to best communicate to various ages and backgrounds. Consider using tours, demonstrations, slide presentations, outdoor classroom study activities, guided interpretive walks, auto tours, photography/art exhibit of wildlife/wildlands at the station.

3.70. Special audiences. Teachers or other potential users of outdoor classroom sites need to be informed of what opportunities are available at the station, what is expected of them, and what help can be expected from FWS. They need to know:

3.70

- resources available on loan for use in outdoor classrooms (activity plans, equipment, audiovisuals, books)
- one-time field trip possibilities (Many classes may make only one trip all year to the station; when you have but one opportunity to reach this group, what impression do you wish to create?)
- unit or long-term study in EE
- how to best use the outdoor classroom site: advance preparations, scheduling, selecting activities

- orientation to site: precautions, locations, potential problems, etc.)

3.71. Working with the Media. It's important to establish a good relationship with reporters. If they know they can depend on the accuracy of your statements and if they are treated courteously, they will be more willing to give you press coverage when you need it. It may be possible to establish a weekly newspaper column or regular interview on local radio/television to discuss some topic that relates to fish, wildlife, or wildlands. Press releases and public service announcements (PSAs) are commonly used in providing information to the media and the public.

3.71

- A press release is a common means of reaching the media and therefore the public. Refer to "How to Write a News Release," U.S. Fish and Wildlife Service Public Affairs Tips GFO 872118 for suggestions on writing a news release.
- Public service announcements of 10-60 seconds will frequently be aired by most local radio and television stations. These are basically commercials to "sell" an idea--such as an educational campaign to "Save our ____" or a special event or service, such as an open house. See "Getting the Message Across with Radio" in FWS Public Affairs Tips GPO 1981 0-343-811 for more information.

3.72. Flyers are an inexpensive means of wide-audience promotion, usually for special events. They are usually printed on one sheet of paper and designed to first catch the eye and then inform. The flyer should be simple and communicate one theme--and do it well. Make sure the information includes who is invited to participate in the event, what is taking place, when, where (map perhaps), and who is sponsoring the event. Distribute the flyers through the chamber of commerce, schools, clubs, restaurants, lodging facilities, sporting goods stores; hand out at shopping centers, grocery stores, etc., depending on the

3.72

audience involved; post on bulletin boards, windows, etc.

3.73. Seeking Public Involvement. Any major decision involving public lands and monies demands involvement and input from the public. Involvement should be sought in each step of the planning process--certainly before a management decision has been made. The station is responsible for the public involvement process, including publicity, informing and educating the public; analysis of input and integration into the final decision; and informing the public of the decision and the rationale used. Fewer complaints over management decisions will be encountered if the public is involved in a meaningful way in deciding the outcome. Support for FWS Programs and wildlife resources will be enhanced through citizen involvement.

3.73

3.74. Public involvement must be planned like any other activity, in terms of collecting information and analyzing the situation; writing objectives; deciding on what will be done, who will do what and budgeting time and money to get the job done; carrying out the plan; informing the public of the outcome; and evaluation of the process and its results.

3.74

(1) Collecting and analyzing information pertaining to the decision

--What alternatives are there to solving the "problem"?

--What are the effects of the various options?

--What groups/individuals will be affected and what are the implications of that impact?

--Which communication techniques will effectively reach the public?

--What educational techniques will best prepare the public to make input into planning or management decisions?

(2) Write objectives for public involvement and define the public sought. What is really expected from the involvement? This should be clearly delineated to avoid later misunderstandings and the objectives should be realistic so neither management nor the public has false expectations.

The objectives should be explained to everyone concerned. All those potentially affected should be invited to participate, whether they are for or against the proposal. (Catering to a special interest group's wishes may cause more public relations problems than not requesting any public involvement.)

(3) Planning strategies to meet the objectives

--How will various "publics" be reached? Usual vehicles include notices in the Federal Register, news releases, notices at the station, letters, etc. to public interest groups, PSAs, interviews with media representatives, word-of-mouth campaigns.

--What format should be used? Hearings and workshops are the most common formats. A relaxed atmosphere and informal setting will encourage communication. The public must feel that FWS listens and wants their suggestions.

--How many meetings shall be held and when shall they be scheduled? Don't rush the input process and give enough lead time to hear from all the "publics" involved. Publicize far enough in advance and give enough advance information so people will have a more accurate perception of the problem. It's important to identify misconceptions early on and provide whatever information necessary to education people.

--What resources must be provided? Someone must coordinate the efforts, moderate at meetings, and respond to phone inquiries and media questions. Someone should also be assigned to record comments and summarize the suggestions from each public forum. Costs of mailings, publicity, information packets, etc. will have to be budgeted.

(4) Implementing the plan.

Keep in mind as the plan is carried out that both the public and the FWS should be involved in a learning exercise. FWS personnel should, of course, be listening to what

the public suggests, but FWS personnel should also be sharing their expertise. Think of it as another exercise in environmental education--with a much larger audience. Employ the learning techniques used in outdoor classroom and interpretive activities to involve the public in making an informed, knowledgeable decision. In most cases the decision made will be with them for a long time; it warrants careful consideration.

(5) Providing feedback to the public.

Summaries of meetings could be mailed to participants and minutes could be printed in the newspaper to keep people informed during the public involvement process. After the decision is made, the public should be told how their suggestions were used. The same communication techniques used to initially reach the public could be used to tell them the final results.

(6) Evaluating the process.

- Were the objectives met?
- Which meetings were most successful and why?
- Which activities were wasted effort?

3.75. Resources.

3.75

Orr, J.F.. 1979. "How to Involve the Public in Parks and Recreation," Parks and Recreation, January.

NEPA/Public Involvement Supplement to the National Wildlife Refuge System Planning Workbook and Refuge Manual Chapter 2. Public Relations.

CREATING SAFE, NON-THREATENING ENVIRONMENTS

←rationale→

3.76. A safe, non-threatening environment is absolutely essential to both learning and the recreational experience. People will neither learn from nor enjoy a situation they perceive as personally threatening. Many learning theorists (Rogers, Pittinger) have observed the detrimental results of threatening situations on the learning process; more recently neuroscientists have described the physiological reactions in the brain that explain why learning cannot occur under threatening conditions. The brain acts to defend against the threat and no real learning can occur. Therefore, the learning environment must be free from threat.

3.76

3.77

3.77. Threat involves more than the fear of physical harm. Experiences that cause a person to feel inadequate generate the expectation of threat. Punishment, ridicule, chastisement may also be perceived as threatening to the self. An atmosphere of acceptance of individuals--their mistakes, inconsistencies, inadequacies, as well as their more positive attributes--will allow learning to occur. Without this atmosphere, no method of instruction can be successful. This concept has a number of implications to activities on field stations.

- Activities in outdoor classrooms and interpretation should be within the ability of participants to accomplish with some degree of success. If all activities or media require advanced levels of ability, the person may feel inadequate--and certainly unwelcome.
- Visitors should feel welcome at the station. Learning is less likely to occur if people feel they aren't supposed to be on the station. A simple "Visitors Welcome" at the entrance may be all that is needed.
- Ethnic, racial, religious, or sexual biases are threatening. While not necessarily intentional, some written materials, especially non-current media and historic materials, may contain words, pictures, examples, and so on that are offensive to some. It takes a careful, purposeful reading of all materials used to insure that biases are avoided, if possible, and slurs eliminated.
- Insuring the physical safety of the visitor (and employees) is a paramount concern. Four types of hazards predominate in outdoor recreation settings: unsafe or improper equipment, conflicting uses of a site or facility, unsafe environmental conditions, and unsafe development of facilities. The most common accidents are drownings, car accidents, and falls. A number of suggestions to improve safety are discussed in the literature:

--Safety features should be part of all barrier-free design. Accessible design is safe for all people. Adequate lighting, drainage grading, nonslip surfaces, good ventilation, guardrails along hazardous trails, and pedestrian cross markings should be part of all designs (Rubin 1980:43).

--Accidents are less likely to occur when employees are knowledgeable, informed, interested, trained, and skilled.

--Natural safety hazards should be inventoried, appraised, and mapped in the site analysis (e.g. rapidly flowing water, rugged terrain, rock slide areas, etc.).

--People must be aware of hazards they are likely to encounter and understand why they are hazards. They can be informed via signs, literature, interpretive materials, audio systems, bulletin boards, and personal contact. Lists of hazards and "don'ts" will probably be ignored or forgotten. Use the same attention-getting techniques you would use to communicate an interpretive message.

--Safety evaluations and maintenance checks should be done on a regular schedule by qualified personnel. All employees should be alert to safety hazards; visitors could also be encouraged to report real and potential hazards.

--A station emergency plan should be developed, relating to specific activities, site design, number of visitors, and proximity to hospitals, fire stations, police, etc. It should include visitor and employee evacuation routes and access corridors for emergency vehicles.

--A fire protection plan should provide for professional firefighting services and procedures for immediate response by staff.

--Emergency treatment services should include first aid and transportation to medical facilities.

--Potential friction between user groups at a particular site should be considered at the earliest planning stages to avoid conflicts or accidents. Truly incompatible uses of a site should be prohibited; other problems (such as hunting and nonhunting uses of an area) can be controlled via schedules, area restrictions of certain activities, and other regulations.

3.78. Resources.

3.78

- Christiansen, M.L. 1980. "Planning and Design for Safety and Emergency Provisions," Trends, Vol. 17, No. 1:9-13.
- Davis, W.W. 1980. "Towards a System for Evaluating Visitor Safety/ Accident Control Programs in Parks and Recreation," Trends, Vol. 17, No. 1:18-23.
- Doerr, K. 1980. "Accident Analysis--A Statistical Survey of Park and Recreation," Trends, Vol. 17, No. 1:27-28.
- Enger, D.K. 1978. "New Approaches to Safety Problems," Trends, Vol. 15, No. 3:27-31.
- Hart, L.A. 1975. How the Brain Works, Basic Books, New York.
- Hast, J.H. 1980. "Conclusion: Importance of Effective Communications in Your Safety Management Program," Trends, Vol. 17, No. 1:45-47.
- Pittenger, O.E. and Gooding, T.C. 1971. Learning Theories in Educational Practice, John Wiley and Sons, New York.
- Rubin, M.C. 1980. "Safety for Special Populations," Trends, Vol. 17, No. 1:43-44.
- Surles, L.E. 1980. "Providing Safe and Healthful Concession Facilities and Services," Trends, Vol. 17, No. 1:39-40.
- See also 5 Refuge Manual 8 Exhibit 1 and RM 13. Visitor Protection.